Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York

All communications should be addressed to the New York Office, 30 Church Street

EDWARD A. SIMMONS, *President*
LUCIUS B. SHERMAN, *Vice-Pres.*
HENRY LEE, *Vice-Pres.*
SAMUEL O. DUNN, *Vice-Pres.*
CECIL R. MILLS, *Vice-Pres.*
FREDERICK H. THOMPSON, *Vice-Pres.*
ROY V. WRIGHT, *Sec'y.*
JOHN T. DEMOTT, *Treas.*

CHICAGO:
105 West Adams St.

WASHINGTON:
17th and H Streets, N. W.

CLEVELAND:
Terminal Tower

SAN FRANCISCO:
215 Market St.

Editorial Staff

SAMUEL O. DUNN, *Editor*
ROY V. WRIGHT, *Managing Editor*
ELMER T. HOWSON, *Western Editor*
H. F. LANE, *Washington Editor*

B. B. ADAMS
C. B. PECK
W. S. LACHER
ALFRED G. OEHLER
F. W. KRAEGER
E. L. WOODWARD
J. G. LYNE
J. H. DUNN
D. A. STEEL
R. C. AUGUR
R. A. DOSTER
JOHN C. EMERY
MARION B. RICHARDSON
H. C. WILCOX
NEAL D. HOWARD
RICHARD W. BECKMAN
LLOYD GEORGE
CHARLES LAYNG
GEORGE E. BOYD
WALTER J. TAFT
GARDNER C. HUDSON
M. H. DICK
W. J. HARGEST

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, $6.00. Foreign countries, not including daily editions $8.00.

Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

Vol. 90 March 14, 1931 No. 11

In This Issue

Heavy Construction on the Norfolk & Western ..... Page 533

A description of work involving three long tunnels and 3,400,000 cu. yd. of open excavation, and costing about $11,000,000, undertaken by this road in building two new coal feeders, with a total length of 52½ miles.

Tax-Aided Competition Denounced by Bank Leader 540

Rome C. Stephenson, president, American Bankers' Association, sees in it a menace to public welfare, necessitating an impartial study.

Efficiency Increased by Operating Changes 545

Tells how the Reading increased gross ton-miles per train-hour on its Harrisburg division from 29,000 in 1927 to 35,547 in 1930.

EDITORIALS

"Railway Attacks on Waterways" 529
Railroad Scrap 531
Car Transfers Reduced 532

GENERAL ARTICLES

Heavy Construction on the Norfolk & Western 533
Report on Readville Collision 537
Florida East Coast Redecorates Dining Car 538
Tax-Aided Competition Denounced by Bank Leader 540
I. C. C. Continues Reciprocity Hearings 542
Report on Transport in Britain 543
Freight Car Loading 544
Efficiency Increased by Operating Changes 545
Depression Obscures Effect of Reduced Rates 547
Motor Transport Investigation 548
British Report on Automatic Train Control 552

LOOKING BACKWARD 553

COMMUNICATIONS AND BOOKS 554

ODDS AND ENDS 556

NEWS 557

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

Save the Cost o

HOW to reduce capital expenditures and the resulting overhead; how to reduce operating expenses sufficiently to offset decreases in traffic; at least how to maintain a fair rate of return and investor confidence; these and other economic studies are uppermost in the thoughts of all railway executives.

Then why build that *extra* track when by installing the "Union" Centralized Traffic Control System, traffic on existing trackage can be sufficiently speeded up to make such construction possibly permanently unnecessary? Why not save this large initial expenditure and also all of the resulting increased maintenance charges?

"Union" Centralized Traffic Control places the regulation of all traffic, over a division or part of one, at the finger tips of one man. Complete, instant information is constantly before the operator. It is accurate, and impossible of misinterpretation. Its automatic train graph makes a permanent record of all train movements and the position of all trains, while the conditions of all switches and signals, are shown by light type indicators on the control panel. It almost doubles the existing track capacity.

"Union" Centralized Traffic Control is engineered to promote economies. Call upon our nearest district office to furnish you with more detailed information.

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

"Railway Attacks on Waterways"

"An Answer to Railway Attacks Upon Waterways," written by Cleveland A. Newton, general counsel of the Mississippi Valley Association, is being distributed. Mr. Newton is the official spokesman of the shippers who compose this organization, and presumably they regard his statement as the best that can be made in behalf of large expenditures upon rivers and canals. A careful reading of it raises a question as to whether Mr. Newton and those he represents deliberately disregard economic experience, facts and principles. Never since free silver was advocated has there been submitted to the American public an economic policy so unsound, or supported by such fallacious arguments, as that of inland waterway development; and nobody has made a more fallacious and misleading argument than Mr. Newton.

The crucial issue between advocates and opponents of the development of inland waterways—by which we mean rivers and canals—is that of comparative costs of transportation. These costs are not represented by freight rates by rail and water, because a large part of the costs by water consist of interest and maintenance costs paid by the public in taxes. The Bureau of Railway Economics, in an exhaustive study, has concluded that between points 100 miles apart by rail the average total cost of transportation per ton by certain waterways, and the average rates by railway in the same territory, are as follows:

By the New York State Barge Canal, $1.94, consisting of freight rates, 45 cents, taxes, $1.49; by rail, $1.09.

By the Ohio river system, $1.24, consisting of freight rates, 60 cents, taxes, 64 cents; by rail, 88 cents.

By the Mississippi river, $1.12, consisting of freight rates, 60 cents, taxes, 52 cents; by rail, $1.01.

As Mr. Newton does not attack these figures, he admits by implication that they are approximately correct. As to the New York State Barge Canal, however, he says: "When the canal carries 20,000,000 tons per annum, operating and maintenance costs, together with interest on the state's investment, would amount to only 22 cents per ton on each ton carried, thus making a total cost to the shipper, after reimbursing the state, of 67 cents per ton for each hundred miles, while the rail rate for the same service is $1.09." But just when does Mr. Newton expect the canal to carry 20,000,000 tons? That was what it was predicted it would carry annually when its enlargement was begun in 1903, and when, after a huge expenditure on it, it was opened over its whole length for traffic in 1918; but in only one year since then has it handled more than 3,000,000 tons. Mr. Newton's estimate of what would be the average cost of transportation on it if it handled seven times as much traffic as it does is as rational as was the prediction made almost thirty years ago that when it was enlarged it would handle seven times as much traffic as it ever has since. That transportation on it now costs almost 80 per cent more than the average freight rate by rail is a fact. That transportation on it will or can be made to cost much less is merely one of those wild claims in which waterway advocates habitually indulge in complete disregard of experience and reason.

"Savings" on the Ohio River System

Mr. Newton's effort to answer the figures of the Bureau of Railway Economics showing the total cost of transportation on the Ohio river system is peculiarly grotesque. First, he says that large savings have been made by the improvement of the Monongahela river. This river was given great advantages by nature, including coal mines adjacent to it, and unquestionably freight is handled cheaper on it than by rail; but it is only a small part of the entire Ohio river system. Passing to the Ohio, Mr. Newton says, the War department "reports that the water rate on steel from Pittsburgh to Cairo is $4.85 per ton less than the rail rate," and adds: "An equal saving should be made on all commodities carried by water on the Ohio. At this rate the savings on the Ohio, when the commerce reaches 50,000,000 tons, will amount to $242,500,000 per annum—approximately twice the cost of the Ohio improvement." Almost 90 per cent of the present traffic on the Ohio is coal, sand and gravel, and the absurdity of the assumption that, if $4.85 a ton can be saved in freight rates on steel, it can also be saved on "all other commodities," is easily demonstrable by the fact that no saving remotely approaching the amount mentioned is made now on this 90 per cent of the present traffic.

Furthermore, the officially estimated maximum capacity of the Ohio river as now improved is only 30,-

000,000 tons annually, and Mr. Newton's use of 50,000,000 tons as a basis for calculating future "savings" on it is a typical example of pro-waterway argumentation.

As "another proof" that the figures of the Bureau of Railway Economics regarding costs of transportation on the Ohio system are incorrect, he cites a few comparative freight rates by rail and water, and adds:

"As evidence that river navigation upon the Ohio is practical and feasible and that heavy commodities can be carried by water much cheaper than by rail, I beg leave to call attention to the fact that the steel and coal industries along the Ohio, together with other successful industries, have invested more than $30,000,000 in steel barges and tow boats, thus providing facilities to carry their products by water. If these trained, experienced executives felt that rail transportation was as cheap as water they certainly would not make these vast expenditures for river equipment."

According to the statistics of the Bureau of Railway Economics the average railway rate per ton mile in the Ohio river territory is 8.83 mills, while the comparable cost by water is 12.36 mills, of which, however, the public pays in taxes 6.36 mills, while the shippers pay in rates only 6 mills. In other words, the shipper can save an average of 2.83 mills per ton mile, or over 30 per cent of the average railway rate, by shipping by water, and "these trained, experienced executives" take advantage of the opportunity to do so, but the opportunity exists solely because the public contributes 6.36 mills per ton mile toward the cost of water transportation on the Ohio river system, or more than the shipper himself pays and more than twice as much as he saves. If the big steel and coal corporations that transport for themselves in their own boats 95 per cent of all the traffic on the Ohio river system had to be subsidized by the taxpayers of the United States, could not some way of subsidizing them have been adopted that would have been cheaper for the public than that of providing water transportation which costs the public more than twice as much as it saves the shippers?

Mr. Newton, in order further to mislead his readers, quotes only that part of the statistics of the Bureau of Railway Economics which show that on the Mississippi river, on the average, the shipper pays 60 cents for transportation which, by rail, would cost him $1.01. But the statistics also show that every time a shipper saves the difference of 41 cents the taxpayers of the country pay 52 cents in taxes to save it for him. Why should the public be taxed to pay any of the shipper's cost of transportation, and why, especially, should the public be taxed 52 cents to save the shipper who uses the Mississippi river 41 cents?

"Disadvantages of The Middle West"

Like other waterway advocates, Mr. Newton evades the real facts as to the cost of inland water transportation, and thus renders it unnecessary for himself to answer such embarrassing questions. He presents at great length, however, an argument the implication of which is that, no matter how much it may cost the taxpaying public, the middle west must be provided with water transportation that will afford it lower freight rates. He compares rates by water from the Atlantic seaboard and by rail from the middle west to the Pacific coast to show the disadvantage of the middle west, in complete disregard of the fact that the only reason why rail rates from the middle west to the Pacific coast are not much lower is that the Interstate Commerce Commission refuses to exercise its legal authority to allow the railways to make them lower to the coast without correspondingly reducing them to intermountain territory.

He says: "Population follows industry, and industry in the United States has been driven to the lakes and to the seashore where cheap water transportation is available." This statement, so often made by middle western advocates of inland waterways, is simply not true. According to government census figures, from 1921 to 1927 the number of manufacturing establishments in the middle west declined 1.5 per cent, while in the east it declined 6.7 per cent. The value of the output of manufactured goods in the east increased in the same years almost 31 per cent, whereas in the middle west it increased over 55 per cent. In these years the value of the industrial output of Iowa increased 51 per cent; of Minnesota, almost 26 per cent; of Wisconsin, 62.5 per cent; of Illinois, 45.4 per cent, and of the United States as a whole, less than 49 per cent.

The shippers who compose the Mississippi Valley Association, Mr. Newton says, "are not opposed to railways; they are not interested in waterways; they are only interested in a system of transportation capable of carrying the commerce of the Mississippi valley at the lowest price obtainable." While "not opposed to railways" they are seeking to divert all the traffic possible from them regardless of the effect on the railways; and their method of getting for themselves "the lowest price obtainable" is that of influencing the public to increase the taxes it must pay much more than the savings in freight rates secured by the shippers will amount to. They are perfectly unselfish. All they want is to be subsidized by the public in order that they may increase their own profits, whatever may be the effect on the traffic and earnings of the railways or on the tax burden borne by the public. And this policy is favored by the heads of many large industrial concerns who, at the same time, profess to be opposed to "government in business," and solemnly denounce the direct or indirect giving of subsidies to farmers and the unemployed!

One of the principal reasons why there is too much "government in business" is that the country has too many rich beggars. When the "trained, experienced executives" of large industries, whose business astuteness so excites Mr. Newton's admiration, quit holding out a tin cup to the taxpayers, and begin to stand for

sound public policies affecting their own as well as other industries, there will be less of the tendency of government, so much lamented by these same "trained, experienced executives," to adopt paternalistic policies and engage in socialistic projects.

Railroad Scrap

The business depression and the profound decline of scrap prices are causing railroads to restudy their scrap handling. The restudy is well timed, for, despite the attention which has been given to railroad scrap handling, the business is still under a cloud. Large investments have been made in plants, large aggregations of labor are employed in the work and attractive reports are made of savings. Yet skepticism persists. Railroad men, as well as scrap dealers and manufacturers, share it. Many who have seen the handling are not convinced; operating statements are ridiculed; marketing policies are scored and the scrap-handling enthusiasts are charged with ignorance and waste, and some of them with misrepresentation. It is not a pleasant situation for the railroad scrap man who thinks he is right, or for managements who want to be right.

The railroads once sold their scrap largely unsorted, and the scrap dealers prepared it for the mills in commercial yards. Now the railroads do the sorting in their own yards. In addition to sorting, the scrap is broken, cut by shear or torch, cleaned, and straightened or bent as the case may be, to separate one kind of metal from another, to reduce it to smaller sizes or to prepare it for market in other ways, on the theory that prepared scrap will command higher prices than if sold unprepared; also that reclaimable material is increased. The purchases and stores division of the American Railway Association has conceived as many as 76 classifications into which railroad scrap may be divided; 45 for ferrous scrap; 17 for non-ferrous scrap; and 14 for non-metallic scrap; and many roads are now virtually reducing their retired locomotives and cars to bits before putting the metal on the market.

Railroads know that sorting and preparation entail expense and have been diligent, in recent years, in developing cost records, but the best records do not satisfy the economist. They seldom include various costs, direct and indirect, involved in collecting the scrap where produced, loading it on cars and hauling it to central yards, usually in revenue equipment, which is often subject, under such loading, to high rates of depreciation. The movement can sometimes be adjusted to reduce empty mileage, and it is valued by the operating man who is judged by ton-mile yardsticks, but if these costs were known, doubtless some scrap would not move very far.

Neither do the costs always take into consideration the movement of tonnage from the preparation point to market. The problem arises with miscellaneous scrap, but is accentuated in equipment dismantling. When equipment is sold intact, it moves to the market on its own wheels. When destroyed in railroad yards, it moves to market in revenue cars. The shrinkage in the selling weight of badly rusted equipment also is sometimes considerable. Moreover, when scrap was sold mixed, the buyer paid freight on all scrap moving from his yard to the mills. At present, most scrap moves direct from the railroad's yard to the mills on orders from the scrap buyer, and the railroad receives no revenue for this movement over its lines.

While the preparation is done to secure the premiums paid for prepared scrap, the premiums do not always cover the cost of preparation. It is claimed that labor is cheaper and more closely supervised in centralized yards than at equipment repair shops, but it is difficult to allocate the handling charges. The small charges made for depreciation, liability insurance, etc., found in some reports, are challenged and often some indirect charges are not included in the reports at all.

Both with miscellaneous scrap and dismantling, the tendency is to lay aside quantities of material for reclamation. This leads to the allocation of some expenses for preparation to reclamation operations instead of to scrap handling. The difference between the imperfectly-determined value of scrap, labor and material used in the reclamation work, and the price at which new material could be bought, is called a saving, and, when applied to the yard work, particularly to dismantling, reduces the book cost of handling, but, it is seldom that the reclaimed material is worth the price which forms the basis for computing the savings. Instances have been noted where the values used are even higher than the prices for new material. Some of it is applied at added expense, only to fail prematurely and return to scrap after causing expenses in operation and maintenance that would have made new material cheap at the price. Yet no charge is made against the yard operation for handling and carrying this material from the time it leaves the plant until it again returns as scrap.

Moreover, the accumulations of materials that have been seen around some railway plants awaiting reclamation suggest that carrying charges on idle scrap are not applied and, in studies of dismantling work, it has not appeared that the scrap produced by reclaiming the salvaged locomotive and car parts is associated with scrap handling.

The Marketing of Scrap

A great problem facing the railroads, however, is the marketing of the scrap after it is prepared. Scrap iron is in demand. It is estimated that 35,000,000 tons of scrap iron were used during 1929 in producing 99,000,000 tons of pig iron and ingots. The ratio of scrap iron to steel plant output is over 30 per cent. The market, however, is not unlimited. It can be-

come congested, and, when that occurs, prices are bound to fall. The prices offered for scrap at present are the lowest in years. They have been moving downward for months and immediate recovery is not expected.

When the prices offered for scrap were high and the premiums offered for prepared scrap were attractive, many roads had the unpleasant experience of producing quantities of prepared scrap only to find the demand not sufficiently permanent or large enough to support the price levels upon which the work was launched. What can be expected at a time like this when prices are low can be imagined. There is no consuming demand for many classes of scrap which the railroads are spending money to prepare and the market is so sensitive that 1,000 tons of special scrap can often depress prices.

Under such conditions, the scrap dealer provides the market. Being confronted with the necessity of storing the material for subsequent sale, he is disinclined to offer more for special grades not immediately in demand than for general grades, and, knowing that general grades of railroad scrap do not contain the special grades, he does not offer as much for the general grades as he would for mixed scrap.

There is an unusually strong urge at present to favor scrap work, because scrap both offers a ready source of cash and provides employment. Some railroads, aware of the depressed prices, are storing large quantities of prepared scrap in cars in readiness for sale when the prices rise. Such roads may well ask what will be the effect on the increased prices when the accumulation is released. Of equal importance, those who plan to accelerate their normal scrap work may well consider the immediate demand for scrap and the reclaimed material if they would not risk seeing the profits they anticipate turned into losses. Where the dismantling work is desired for employment reasons, it is also insecure merely to base the decision to do the work locally upon the difference between the prices offered by scrap dealers for uncut equipment and the supposed value of the prepared scrap and reclaimed material. The imperfections of the railroad's own costs must be considered, as well as the effect of a sudden release of large volumes of prepared scrap on a glutted market.

The scrap industry is important to the railroads, which derive millions a year in income from this source, and also savings in waste prevention, but the work needs research. While there is an abundance of departmental reports on scrap-handling and reclamation costs and savings, no one has yet satisfactorily shown what scrap work actually costs the railroad. This question goes to the heart of the problem and is one which management is waiting to have answered. Examination of the subject in that direction will reveal much about a large and important business and promises to increase the income from scrap sales and protect the railroad from mistakes and losses which are constantly being made.

Car Transfers Reduced

One of the important accomplishments of the railways in recent years, in the interest of economy and improved service to the shipper, has been the reduction of transfers of loaded cars received in interchange, but unfitted to move to destination because of improper loading or serious defects in the cars themselves. It was not until a comparatively few years ago that the magnitude of losses from this source began to be fully appreciated and steps taken to enlist the co-operation of shippers, car inspectors and car maintenance forces to effect improvement.

An example of the results achieved in general throughout the country is afforded by the almost phenomenal reduction in transfers of cars passing through the Chicago district. Records of the Chicago Car Interchange Bureau show that it was necessary to transfer 11,938 cars at this important interchange point in 1924; 7,253 in 1925; 3,047 in 1926; 1,775 in 1927; 1,421 in 1928; 1,289 in 1929 and only 805 in 1930. The substantially improved showing in 1930 as compared with 1929 must be discounted somewhat because of the smaller number of cars received in interchange in a period of industrial depression. No exact figures of all the cars interchanged in the Chicago district are available, but it may be reasonably assumed that approximately the same reduction as in revenue car loadings was experienced, namely 13.4 per cent. By way of comparison, the reduction in cars transferred was 37.6 per cent.

On the other hand the reduction in transfers at Chicago and other interchange points, both large and small, represents a greater accomplishment than appears on the surface because car conditions are far from being 100 per cent satisfactory. There can be little question that the drastic reductions in car inspection and repair forces, which most railroads have been compelled to make, are responsible for a certain amount of deferred maintenance and failure to select suitable cars for individual loading. Loaded bad order cars are, in too many cases, being accepted from shippers under the threat of traffic diversion and then permitted to move to connecting carriers without correction of the defective car or load condition. Consequently, these cars, as received at interchange points, are in urgent need of attention. The number of cars requiring transfer would be greatly increased except for the ingenious, earnest and strenuous efforts of car department supervisors to make repairs under load.

A conservative estimate of the average cost of transferring a load of freight from one car to another is $25, exclusive of damage claims and resultant dissatisfied shippers. It will be readily seen, therefore, that the savings to the shippers as well as to the railroads in reducing transfers are substantial if somewhat indeterminate. To effect these savings in spite of the conditions mentioned is a highly commendable accomplishment.

In One of the Heavy Rock Cuts on the Way to Hurley, Va., on the Big Sandy

Heavy Construction on the Norfolk & Western

Two new coal feeders, nearing completion, with a combined length of 52½ miles, involve three long tunnels and approximately 3,400,000 cu. yd. of open excavation

FOR the purpose of opening up large tracts of coal and timber adjacent to its lines in Virginia and West Virginia, the Norfolk & Western has, during the last two years, been building two new lines with a combined length of 52½ miles, at a total cost of about $11,000,000. The shortest of these, 10½ miles long, leaves the main line at Wharncliffe, W. Va., about 32 miles east of Williamson, and runs in a general northeasterly direction to Gilbert, where it connects with the Virginian and the Chesapeake & Ohio. The other branch, which is 42 miles long, leaves the main line near Devon, W. Va., about 23 miles east of Williamson, and extends in a southerly direction through a part of Kentucky to Grundy, Va.

Both of these lines, which were begun in the latter part of 1928, will be completed early this year. The line from Wharncliffe to Gilbert is being built under the name of the Guyandotte & Tug River Railroad, while the other line is being constructed under the name of the Big Sandy & Cumberland Railroad, this name being that of a narrow-gage lumber road which it supplants.

Both lines penetrate some of the most rugged and undeveloped country in the Cumberland mountain range and, for this reason, both have involved interesting and difficult construction work. The outstanding features of the new lines are the extent of the work required in establishing them along precipitous bluffs and cliffs in deep narrow valleys of winding streams and through abrupt ridges, and the favorable alinements and grades which have been secured in the face of these adverse conditions.

The Guyandotte & Tug River line is built to practically a water grade throughout. Immediately after leaving Wharncliffe, it follows Ben Creek about 4⅓ miles on an average grade of 1.2 per cent, compensated, until it reaches Staggerweed mountain, through which it passes in a 4,000-ft. single-track tunnel on a level grade. From the north portal of this tunnel the line descends to Gilbert, following Gilbert creek on an average grade of 0.9 per cent. For the most part, the roadbed is being cut through the steep mountain side, and will involve total excavation of about 890,000 cu. yd. of material, in addition to the removal of about 115,000 cu. yd. of material in the construction of the Staggerweed tunnel.

The first 4.34 miles of grading on Ben creek, which was entirely in side-hill cuts, was begun in December, 1928 and is now completed. This work involved the removal of 350,000 cu. yd. of material, 35 per cent of which was solid rock. Between the tunnel and Gilbert, the total excavation required is 540,000 cu. yd., about 72 per cent of which is in solid sandstone and slate. About 500,000 cu. yd. of this grading has now been completed.

Interesting Work on 4,000-ft. Tunnel

Practically all open excavation on the new line has been done with steam shovels, following extensive blasting at many points. Some direct casting into fills was possible along the line, but by far the larger part of the fill material was hauled into place, standard and narrow-gage equipment being used largely on the first part of the line, while both narrow-gage equipment and motor trucks continue to be employed in the work between the tunnel and Gilbert.

Work on the Staggerweed tunnel, which is progressing

rapidly, has been largely through horizontal layers of slate interspersed with layers of sandstone varying from less than 1 in. to 18 in. in thickness. During construction, the tunnel heading was timbered throughout, the rings being spaced 3 ft. center to center for 1,041 ft., 2 ft. center to center for 366 ft. and 1 ft. center to center, or tight, for a distance of 2,593 ft.

The heading from the Ben Creek end was made by the V-cut method, pulling the entire heading at one shooting, while the work at the north, or Gilbert creek, end was carried out by drifting a low central heading or by drifting for wall plates where a heading would not stand up.

Through the south end of the tunnel, timbering was kept within 15 ft. of the face of the heading, but at the north end it was necessary to keep the timbering within two feet of the face to prevent cave-ins. Ventilation within both ends of the tunnel has been provided by Sturtevant blower fans supplying fresh air through DuPont Ventubes, 20 in. in diameter.

When the work on the Guyandotte & Tug River line is completed, there will be approximately 8,000 cu. yd. of plain and reinforced concrete in culverts and bridge abutments and piers, and about 34,000 cu. yd. of plain and reinforced concrete in the tunnel lining, portals, floor and ballast walls.

Big Sandy Line Replaces Narrow Gage

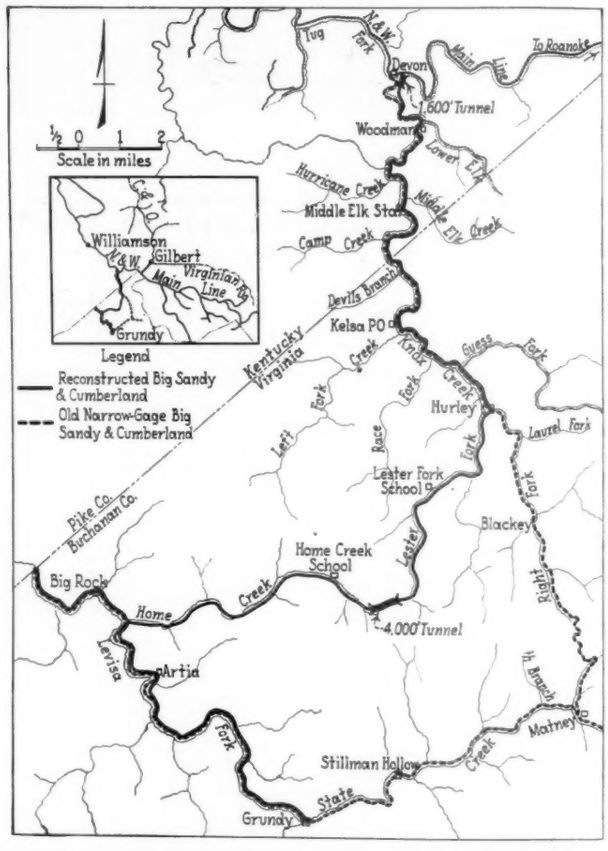
While there are many interesting features in the Guyandotte & Tug River line, possibly the greater interest lies in the construction of the Big Sandy & Cumberland line, not alone by reason of its greater length, but because of the wide variance in the conditions and problems encountered. As stated previously, this line supplants in part a narrow-gage lumber road constructed by private interests early in 1900, from Devon southward along Knox Creek, to Hurley, Va., a distance of 12 miles, and extended later in a swing to the southeast along Knox creek to Blackey, Va., then over the mountain to Matney, Va., and thence westward to Grundy, on the Levisa fork of the Big Sandy river, a total distance of 44 miles. Still later, an extension of the line was built in a northwest direction down Levisa fork, past the mouth of Home creek, to the Kentucky-Virginia state line, a distance of about 13½ miles. This narrow-gage line, which was built originally in the interest of lumbering operations, and extended from time to time to penetrate new tracts of virgin timber, was extended finally into Grundy, a community of about 800 population, to give that community a rail outlet.

The old Big Sandy & Cumberland line served as a common carrier, but because of excess curvature, and grades which exceeded six per cent, it was entirely unsuited for use as an outlet for any extensive coal mining operations. With an eye to developing the rich coal deposits in this territory, particularly south of Hurley, the Norfolk & Western acquired control of the Big Sandy & Cumberland in 1923, and began extensive surveys throughout the whole of the country traversed with the idea of developing the most practical and feasible route for a standard-gage railroad into Grundy. Lines were staked out and considerable right-of-way was purchased from time to time, but it was not until about the first of November, 1928, that construction of the new line was undertaken actively.

New Alinement Deviates from Old

The new line, which has involved approximately 2,500,000 cu. yd. of grading, largely in rock, and the construction of two tunnels with a combined length of 5,600 ft., follows closely the narrow-gage line along Knox creek as far south as Hurley, a distance of about 12 miles, except that instead of leaving the main line at Devon, it takes off from the main line about a mile east of that point and thereby saves about 2½ miles of new construction. To do this, however, involved the construction of two single-track bridges in the form of a wye over Tug fork, at Looney's curve, the point where the new line leaves the main line; the construction and rearrangement of about 21,000 lin. ft. of tracks at this point to provide car storage space, which in itself involved approximately 355,000 cu. yd. of grading, largely in rock; and the construction of a 1,600-ft. tunnel through a mountain ridge, just south of the new wye bridge over Tug fork.

From a small community known as Lower Elk, Ky., just south of the tunnel, which is the junction point of the new line with the narrow-gage line from Devon, the



Map of the Big Sandy & Cumberland, with a General Map of that Line and the Guyandotte & Tug River in the Inset

new line follows generally the alinement of the narrow-gage road and Knox creek, past Kelsa, Va., to Hurley. At this point, because of the topography of the country traversed by the narrow-gage line to Grundy, which would not have permitted either favorable alinement or grades, the new line leaves the narrow-gage and bears to the southwest up the valley of Lester fork through totally undeveloped country. About eight miles from Hurley it crosses a main divide in the mountains through a 4,000 ft. tunnel, and then descends the valley of Home creek to its mouth on the Levisa fork of the Big Sandy river, which is about 9½ miles from Grundy. From this point, where the new line intersects the extension of the narrow-gage from Grundy, it extends southeast to Grundy and also northwest to the Kentucky-Virginia state line, following generally the Levisa fork and the route of the narrow-gage line. In spite of the difficult

country penetrated by the new line, the maximum grade has been held to 1.86 per cent and the maximum curvature to 10 deg.

Unusually Heavy Work to Hurley

While the character of the country traversed presented numerous obstacles to construction throughout the new line, possibly the most difficult part of the undertaking lay between the main line at Looney's curve, and Hurley. In addition to requiring a 1,600-ft. tunnel, this section of the line is confined within the narrow crooked valley of Knox creek, and, of greater moment, had to be constructed immediately alongside or above or below the narrow-gage line, which had to be kept open for one passenger train daily in each direction, as well as for the movement of commercial lumber from the mills and construction materials for the railroad work. On the other hand, many difficulties were encountered on the remainder of the line, which balanced the interference of the narrow-gage with the work as far as Hurley, not the least of which was the virgin character of the country penetrated, without even roads to assist in bringing in construction materials and supplies.

Throughout the territory to Hurley, grading was particularly heavy, amounting to approximately 980,000 cu. yd. of excavation, about 60 per cent of which was solid rock. In order to secure the most favorable grades and alinement, it was necessary to cross Knox creek a number of times and to relocate the narrow-gage line at many points. In carrying out the work in this territory, the greatest of precautions had to be taken, particularly in blasting, to keep from blocking narrow-gage operations.

Extending along the side of the valley, as was necessary throughout most of this territory, side-hill cuts predominate on the new line, ranging up to 110 ft. in height and as long as 2,800 ft. Practically all of these cuts were in bluffs of shale and sandstone, many of them requiring the removal of more than 30,000 cu. yd. of material. The largest cut required the removal of over 90,000 cu. yd. of rock. Many fills were also made in this territory, ranging up to 40 ft. in height. The largest fill, which is 1,100 ft. long and has a maximum depth of 37 ft., required the placing of 40,000 cu. yd. of material.

In spite of the unusually difficult conditions encountered, the maximum grade on the first 8½ miles was held to 0.8 per cent in the direction of loaded movement, with a predominating grade of 0.3 per cent or less, and with curvature as sharp as 10 deg. in only four cases.

On the section of line south of Hurley, over the divide and down Home creek to Levisa fork, a distance of about 16 miles, conditions were similar in many respects to those found on the first 12 miles to Hurley, the line being confined to narrow rugged valleys, but without the interference of the narrow-gage railroad. Many side-hill cuts and full-section fills were necessary in this territory, the cuts being largely in slate and shale.

In the first six miles south of Hurley to the 4,000-ft. tunnel through the divide, side-hill cuts averaged about 40 ft. in depth, with the deepest having a slope face of 97 ft. The largest and most difficult cut made in this territory was in the north approach to the tunnel. This cut, which required the removal of 115,000 cu. yd. of material, was made in three lifts.

Full-section fills ranged up to 1,200 ft. in length and up to 55 ft. in height. In fact, there were four fills in this section which averaged about 50 ft. in height, and which required a total of about 492,000 cu. yd. of embankment. These fills were put up in two lifts from temporary construction trestles, switch backs being necessary to get from one level to the other. As this section

On the New Big Sandy and Cumberland Near the Virginia-Kentucky State Line

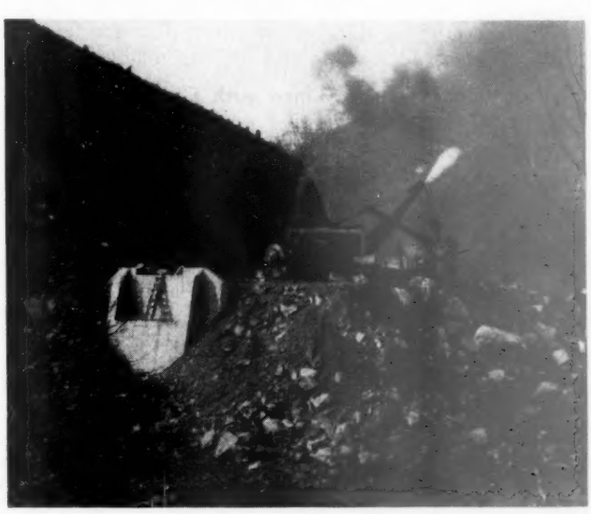
of line begins the ascent over the mountain divide on the new route to Grundy, the grade becomes uniformly greater than on the first part of the line and reaches a maximum of 1.86 per cent, compensated for curvature. The curvature, however, was held down to 8 deg., with the exception of one 10-deg. curve.

South of the tunnel to Levisa fork, grading amounted to about 400,000 cu. yd., 160,000 cu. yd. of which was in solid rock. The maximum grade up the south slope of the divide, which will be against loaded car movement, is 1.75 per cent, this grade approaching the tunnel, the highest point of which is 730 ft. above the main line at Looney's curve. There are only three curves as sharp as eight degrees on this section of the line, all of the other curves being four degrees or less.

South End of Line Follows Narrow-Gage

From the intersection of Home creek and Levisa fork, the new line, northwest to the Kentucky-Virginia state line and southeast to Grundy, follows Levisa fork and the right-of-way of the old narrow-gage railroad. Grading on this part of the line was comparable in extent with that on the other portions, that from Home creek to Grundy, a distance of 9½ miles, amounting to approximately 600,000 cu. yd.

Most of the cuts were made in the mountain sides, the deepest being 65 ft. at the cut line, and the largest requiring 91,500 cu. yd. of excavation. The largest through

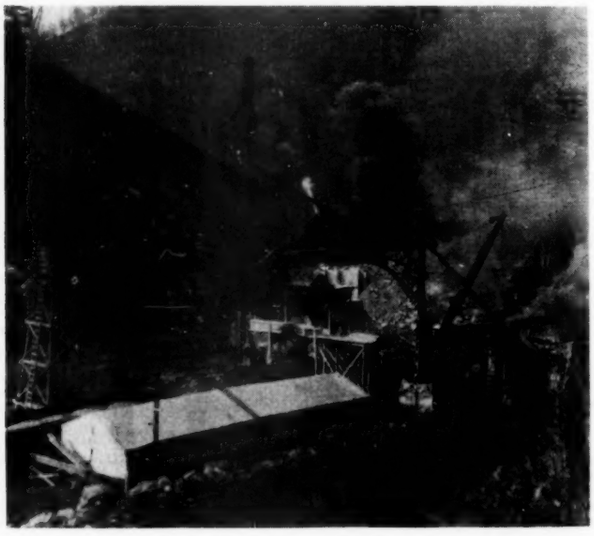


Practically the Full Length of the B. S. & C. is a Series of Heavy Cuts and Fills

cut made, which is 1,200 ft. long and has a maximum depth of 54 ft., required about 67,500 cu. yd. of excavation, while the largest fill constructed required 240,000 cu. yd. of embankment. A large part of this fill was required in providing a site for a car assembly yard.

Throughout the work on the new line, embankments have a minimum width of 24 ft. at subgrade, with an additional foot of width for every 10 ft. of height over 10 ft.; cuts have a minimum width of 30 ft. at subgrade, and the whole line is ballasted with either bank-run gravel or cinders to a depth of 12 in. below the bottom of the ties. As traffic tamps this ballast, an additional lift of six inches is planned. One hundred-pound "fit" rails with "fit" tie plates are used throughout on creosoted crossties.

A wide range of equipment has been used in the grading for the new line, including Bucyrus-Erie, Marion and Osgood steam shovels, Bucyrus-Erie diesel shovels, a Northwest and a P. & H. gasoline shovel and an Insley excavator; Baldwin, Porter and American standard-gage locomotives and Baldwin, Porter, Davenport, Vulcan, Whitcomb and Milwaukee narrow-gage locomotives;



One of the Central Mixing Plants Employed on the Big Sandy

Western and Kilbourne & Jacobs dump cars of from 4 to 20 cu. yd. capacity; and such other equipment as a Jordan spreader, a number of caterpillar trucks and a large outlay of rock drills and drilling machinery.

First Tunnel Lined with Concrete

Both tunnels on the new line involved interesting work. The one near the beginning of the line was constructed by driving crown headings from both ends and then taking out the bench entirely from the north end where the excavated material was needed for constructing the approach fill for the west leg of the wye connection with the main line. The material in the tunnel consisted entirely of hard sandstone, except for a four-foot seam of coal which was uncovered at wall plate grade on the Tug river end and extended throughout the heading to the Knox creek end where it came out just above the roof grade. This soft material made it necessary to timber the entire heading, about 250,000 board feet of timber being required for this work. All of this timber was transported across Knox creek on a cable tramway with a span of 350 ft. The cable of the tramway was swung from a 20 ft. tower on the north side of the river and was anchored in the mountain on the south side, just above the tunnel portal.

Drilling of the heading was done with I-R water Leyner drifter drills on column mountings, while the drilling of the bench, which followed later, was done with I-R, S-49 drills. Mucking within the tunnel was done with a Marion air-operated shovel, loading into four-yard dump cars hauled by narrow-gage locomotives.

No ventilation was provided during the driving of the heading, but a six-foot suction fan was placed at the Knox Creek end of the tunnel while the bench was being taken out. This type of ventilation was possible because the bench, as stated before, was removed entirely from the Tug River end.

Because of the material in the roof of the tunnel, it was found advisable to line the entire tunnel section with concrete. This work was done from a central mixing plant, the concrete being transported into the tunnel on a scaffold car with steel bins mounted on top. The concrete for the side walls up to the spring line on each side was poured directly from the scaffold car bins, while in placing the arch ring, the concrete was dumped into hoppers and then shot into the forms by two Ransome concrete guns.

Two 30-ft. Blaw-Knox steel forms were used in the lining work, and all moving of the forms was done at night so that the work of a single lining crew during the day could proceed uninterrupted.

Second Tunnel Cut Through Limestone

The other tunnel on the line, which is about 4,000 ft. long, is through self-sustaining limestone, except for about 400 ft. at the north end where the limestone is faulted, making it necessary to install permanent timbering. Timbering was also necessary for a distance of 85 ft. out from the north portal to protect the entrance from slides of blue muck or gumbo from the mountain side.

Beginning at the south end of the tunnel, the full section was taken out at one time, a top heading, however, being kept about 10 ft. in advance of the bench, which was taken out in two lifts. Two I-R water Leyner drills mounted on columns were used in drilling the heading, while four I-R wet sinker drills were used in drilling the bench. Mucking was done by an air-operated steam shovel, which loaded into six-yard dump cars. These cars were hauled to the portal by a 10-ton electric motor and there turned over to a dinky steam locomotive for movement to a dump. Ventilation within the tunnel during the work was afforded by an electrically driven pressure blower driving air to the heading through a 20-in. duPont Ventube.

In the work from the north end of the tunnel, where the heading was carried through well in advance of the removal of the bench because of the faulted limestone encountered, the heading was drilled with I-R wet sinker drills, this work proceeding with that in the heading.

All of the material excavated in this end of the tunnel was loaded by hand into low-side dump cars of three-yard capacity, which were hauled to the portal by mules. Here they were dumped automatically, the material being conducted down a chute into six-yard cars for movement to the dump. Ventilation in the north end, as in the south end, was effected by means of an electrically driven blower unit which forced air through a Ventube up to the heading. DuPont 60 per cent gelatin dynamite with delay exploders was used in both ends of the tunnel.

Rebuilt Girder Bridges Used

All of the more important bridges on the new line are deck plate girder spans. These caused no serious

problems, except for the handling of some of the girders to the bridge sites. Altogether there are 16 such bridges, which range in length from a single 50-ft. span to multiple-span structures up to 385 ft. in length. The maximum number of spans in any of the bridges is five and the greatest length of span is 100 ft.

The most interesting feature in connection with the bridges is the fact that a number of them are made up of girders released from main-line service because they were too light for heavy main-line equipment. These girders are grouped in spans according to their carrying capacities and are framed together to produce structures of required strength. Thus, for example, in one of the bridges of three spans, one of the spans is made up of three "fit" girders with new bracing between them; the second span has only two girders which were used formerly as center girders in double-track spans of through plate girder bridges; and the third span, like the first, consists of three "fit" girders framed together with new bracing. The diaphragms, laterals and lateral plates used in connection with the "fit" girders were manufactured at a bridge shop, while field drilling and assembly were carried out by the bridge construction forces, either at an assembly yard or at the site of erection.

All masonry on the line, including piers, abutments and single and double box culverts, of which there are several, is of concrete construction, the concrete having been carefully prepared in accordance with the water-cement ratio and designed for 3,000 lb. loading. Wherever possible, masonry structures were completed ahead of the grading in order to avoid delays to the grading work. This applied also to the installation of pipe culverts, which were of both reinforced concrete and corrugated cast iron pipe, the latter class of pipe being used on the more inaccessible parts of the line because of the greater facility with which it could be transported and handled without special equipment.

Footings for bridge piers and abutments were carried down to a firm foundation in every case, the pier footings extending to depths varying from about 4 ft. to 20 ft. below low water. Wood sheet cofferdams were generally used for all wet excavation, the cofferdams being unwatered with either centrifugal or Pulsometer pumps.

All of the work on these two new lines has been planned and carried out under the general direction of W. P. Wiltsee, chief engineer, assisted by O. V. Parsons, assistant engineer. General supervision of the work until the middle of the past summer was in charge of the late J. W. Raitt, assistant engineer at Bluefield, W. Va., and is now in charge of E. H. Roth, who succeeded Mr. Raitt. The actual work in the field has been in charge of resident engineers. The resident engineers on the Big Sandy & Cumberland work are Roscoe Porter, S. S. Ward, W. A. Neff, W. E. Hankins and J. R. Altizer. C. W. Fiery is resident engineer in charge of the work on the Guyandotte & Tug River line.

The general contractors who have carried out the work on the Big Sandy line are W. W. Boxley, Son & Company, Roanoke, Va.; Sturm & Dillard Company, Columbus, Ohio; the Walton Construction Company, Roanoke, and the H. W. Nelson Company, New York. Practically all of the work on the Guyandotte & Tug River line has been done under contract with W. W. Boxley, Son & Company.

In Oregon the lower House of the legislature has passed a bill to abolish the present Public Service Commission of three members and to substitute for it a single commissioner.

Report on Readville Collision

W. P. BORLAND, director of the Bureau of Safety, has reported to the Interstate Commerce Commission on the collision between westbound passenger train No. 175—the Colonial express, ten cars—and eastbound passenger train No. 910, at a cross-over, on the four-track main line at Readville, Mass., on the morning of January 19. This collision, briefly reported in the *Railway Age* of January 24, page 257, resulted in the injury of 107 passengers, 11 employees and two mail clerks. Responsibility is placed on Engineman Gladding, of No. 175, for not properly controlling speed approaching an interlocking in a blinding snow storm, and also on Signal Foremen Mills and Forbes because of the lack of a distant signal indication. A mechanical distant signal had been put out of service and a new electric distant signal, farther away, had been set up, but the old one was discontinued before the new one was in operation.

Engineman's Statement

On this section of the road the signals are of the controlled manual type. The eastbound train was entering the main line from the north side and was moving at low speed; its tender was struck and overturned by the engine of the westbound train. The engineman of No. 910 had not seen or heard the other train. Changes in the signals had been going on for some time and all hands had information about the work by special bulletin from the superintendent. The home signal is 310 ft. back of the crossover at which the collision occurred; the distant signal, from which the blades had been removed, is 1,706 ft. farther back, and the new distant signal 3,751 ft. still farther back. The engineman, who was interviewed in a hospital five days after the occurrence of the collision, made a statement of considerable length as to his management of the brakes, etc., but what he says gives little useful information farther than to show apparently that he was not sufficiently careful in approaching the home signal in a snow storm. He saw the signals or the locations of signals at both distant points, and saw men at work there; and he understood the rule that the absence or imperfection of a signal, where there should be one for his guidance, required him to control his speed. He made an emergency application of the brakes, but too late.

Signal supervisor Dobson was absent on account of illness and the work was left in the hands of Mills, an electrical foreman, and Forbes, a mechanical foreman. Mills was the only one in possession of a copy of the plans and had been given to understand that he was in charge of the work, (though he denied having thus been instructed).

However, regardless of this point, the two foremen were experienced in their work and each knew that the old signal should not be cut out until the new one had been placed in service. The two gangs of signalmen had gone out together, in an automobile truck. Forbes and his men got off at the old signal; they waited a short time until it was thought the new signal would be in service and then proceeded to cut out the old one. This, says the report, indicates an inexcusable lack of co-operation.

Florida East Coast Redecorates Dining Car

Furnishings and interior decorations follow Spanish motifs—Fourteen paintings of historical interest hung on side and end panels

IN redecorating its dining car "St. Augustine" after it had been given general repairs in the Miller coach shops, St. Augustine, Fla., the Florida East Coast selected a general scheme of interior decoration and furnishing which reflects the Spanish atmosphere and historic background of the oldest city in the United States. In the following of the Spanish motif throughout, the railroad has achieved a distinctive departure from the usual dining-car interior. The colors—red and yellow with light blue and black for contrast—are distinctively Spanish in character. This is also true of the various decorative motifs employed, as they were adopted from authentic pieces of Spanish art of various periods.

The car was built by the Pullman Car & Manufacturing Corporation in 1925 and seats 36 persons. It is of all-steel construction, both inside and out, with combined cast-steel platforms and bolsters. The insulation consists of one course of three-ply Salamander on top of the floor sheets, in the upper and lower roofs and outside walls, except above the windows where two-ply is used. This is secured to the sheets with heavy freight-car paint and with nails spot-welded to the sheets and bent over the insulation.

Ventilation and Special Equipment

Ventilation is obtained in the dining room by the use of eight utility honeycomb ventilators located four on each side. This system is aided by three ceiling fans and two exhaust fans manufactured by the Safety Car Heating and Lighting Company. In the pantry are two utility ventilators, one ceiling fan and one exhaust fan. The kitchen is equipped with solid swinging panels on the side decks and two trap-roof ventilators in connection with two Safety Car Heating and Lighting Company's roof exhaust fans.

Power for lighting is provided by axle generator and batteries, with the battery box located on the aisle side of the car, for the eight large center ceiling lamps and twelve deck lamps, which are located over the tables in the dining room, as well as the kitchen, pantry, platform and special lamps.

All of the lockers, ice boxes and refrigerators in the kitchen and pantry have been faced, both inside and out, with Monel metal.

There are nine windows on each side of the car, 48-in. wide, with mahogany sash and ¼-in. American polished plate glass, except in the kitchen where prism glass is used. The car is equipped with Pullman standard screens and deflectors.

The trucks are of Commonwealth cast-steel, six-wheel type with 36-in. wheels, and Pullman built-up pedestals with standard 5-in. by 9-in. journals. The brake equipment is Westinghouse U C 2-16 with American Steel Foundries' Simplex clasp brakes. The outside painting is of standard procedure, surfacer and primer, railroad standard body color and varnish.

Buffet in the Florida East Coast Dining Car "St. Augustine"

Interior Decoration of the "St. Augustine"

Although decorative treatment may often prove meaningless, due perhaps to the lack of any definite traditions upon which to base an appropriate style, in the case of the dining car "St Augustine," it has been given a definite significance. The color scheme is distinctly Spanish employing a blended combination of red and yellow which was adapted as the national colors of Spain on May 28, 1785, with a two-tone robin's-egg blue ceiling and with touches of gold, and blue and black for contrast. In the painting of the side walls and end panels the natural harshness of the warm colors has been successfully mellowed by a skillful blending in which the two colors merge from one to the other, with-

out a definite line of demarcation. The resulting effect is one of pleasing warmth, particularly under illumination. The center and side lights are of wrought-iron finish with clouded blue shades, all different.

Care was also taken to make every decorative detail of the car authentically Spanish. The floral design occupying the panel over the windows was adapted from the back of a chair in the salon at Madrid, Spain, epoch of Philip II, 1556 to 1598. This is hand painted in terra cotta with considerable detail and delicately shaded with white. Immediately above this, is a scroll border taken from a tile decoration in the Palace of Conde de Casal, Madrid, 1759 to 1788.

The deck-rail decorations, in terra cotta shaded with white, are from old iron nail heads used to decorate doors, chairs and chests of the seventeenth century.

A motif found on a walnut bench in the Palencia collection at Madrid, of the seventeenth century, has been reproduced in gold and brown on the light-blue ceiling beams. Around the base of the ceiling lights appears a design in gold and black, adapted from a brass-mounted chest of the seventeenth century, Madrid. The simple narrow design employed throughout the car, in the paneling, is in blue, gold and black, taken from a salon in the House of El Greco, Province of Toledo, 1537 to 1616. The grill work over the heating pipes reproduces a motif found on a doorway in the palace of Condes de Miranda, sixteenth century.

In order to soften the lines of the windows in the dining room heavy draperies are hung on specially designed wrought-iron rods. In the center of each rod is placed a metal seal of the Ponce de Leon coat-of-arms, which was adopted during the Fifteenth Century. The colors of the draperies are of terra cotta and gold with light-blue relief. Narrow draperies of the same material are also used in the doorway at either end.

The carpet woven to order is likewise of Spanish trend in black, yellow, blue and terra cotta.

Another innovation is the use of the name of the car placed just over each doorway lettered in Old-Spanish style, taken from Guadamur Castle of the Conde del Asalto, fifteenth century.

Heavy Draperies Soften the Lines of the Windows—The Painting at the Left is "Charlotte Street" and that on the Right is the "Old Spanish Trail Marker"

Fourteen paintings of historical points in Saint Augustine adorn the side and end panels, and give added interest to the decorative treatment. These subjects include: The Oldest House, Patio of Oldest House, Fort Marion, Watch Tower of Old Fort Marion, Hot Shot Oven at Fort Marion, Ponce de Leon Statue, Old Spanish Trail Marker, Old City Gates, Fountain of Youth, Treasury Street, St. George Street, Charlotte Street, Slave Market, and The Shrine.

The chairs in the dining room have sturdy and simple lines, and are upholstered in red-Morocco leather trimmed with black. The tiling repeats the color scheme of red, yellow, blue and black, and covers the floor of the buffet and passageway. In the center of the car, on either side, appears the Spanish coat-of-arms in color. The decorations in the passageway, buffet and steward's end of the car are appropriately carried out in the same color scheme.

Interior of the Dining Car "St. Augustine"

THE CARDIFF (WALES) GENERAL STATION and the adjacent Riverside station are to be completely rebuilt by the Great Western of Great Britain at a total cost of £820,000 ($3,985,200). As a result, the two stations will virtually become one, although the Riverside station will retain its present name. The new project provides for additional, longer and wider platforms; increased station trackage; the provision of refreshment and waiting rooms on the principal platforms, and increased storage, inspection and repair facilities for coaches and locomotives. New main and yard tracks, signal changes, the reconstruction of 16 bridges and the elimination of several grade crossings are also contemplated. The first stage of the work has been begun, and it is scheduled for completion early in 1934. Other improvements include the reconstruction of Paddington station (London) and the extension of automatic train control.

Tax-Aided Competition

Denounced by Bank Leader

Rome C. Stephenson, President, American Bankers' Association, sees menace to public welfare — Calls for impartial study — Should commercial operators be required to build their own roads?

"THAT which serves us well we sometimes come to take too much for granted. The railroads have served this country so superlatively well that we are prone in our public affairs to overlook our dependence upon them and our obligations to them. The past, present and future progress of the United States is inseparably bound up with the welfare of the railroads. In neglecting just consideration for them we are even more neglectful of the best economic interests of the public. These public interests are paramount and they are nowhere more greatly liable to harm than through adverse treatment of the railroads". This was the message of Rome C. Stephenson, president of the American Bankers' Association to the Advertising Club of New York, in an address delivered before that organization on February 18. Continuing he said in part:

"Looking at the present and the future as a practical matter, we are confronted with the question as to how much more the public economic interest will stand the invasion of the welfare of the railroads which they are up against from forces and difficulties not of their own creating—and not within the scope of their own unaided powers to combat. I refer especially to new competitions that are undermining the hard-earned position of the railroads not only with the aid of natural economic forces but also through the aid of government policies which, positively or negatively, tend to give these competitors undue advantages over the railroads.

No Complaint Against Legitimate Competition

"It goes without saying that the railroads have no right, nor claim any right so far I have been able to discern to complain at legitimate competition in the field of transportation, for we all recognize that the public is entitled to the best possible transportation obtainable at the lowest practical cost. But equally does it go without saying that this cannot fairly be brought about by using, or by failing to use, the taxing powers of government to enable competitive methods of transportation to do things they could not otherwise do as unaided private enterprises. This is particularly so when such action impairs the invested rights held in good faith by great masses of our people in established enterprises that are serving the whole public well.

"The railroads constitute the greatest single industry in America to which the investments and the wage earning abilities of millions of our citizens are entrusted. If this great public trust is to be protected the railroads must be able to earn more than just enough to pay interest on their bonds and a tolerable return to their stockholders. They must be enabled also to earn a surplus in good years to set aside against periods of depression and at the same time continue to carry out improvements from which the public benefits but which do not add to earning capacity.

"It is not my purpose to argue here against the development of such competitive transportation as the highway passenger motor bus and motor truck as such when conducted under proper conditions and in keeping with public welfare and benefit. I do deem it proper to point out, however, the need for serious consideration as to whether such competition against the public's railroads is being developed under conditions that are unfair to them because either the outright or obscure aid of government policy is the deciding economic factor in that competition.

Growth of Bus and Truck Traffic

"Data compiled by the National Association of Motor Bus Operators, show the startling expansion that has taken place in recent years in this type of public transportation. In 1925 there were in operation over 69 thousand passenger buses of all types. In 1929 there were over 92 thousand—an increase in four years of one-third on an already very substantial base. Restricing the figures to inter-city common carrier buses, we find that this type of transportation, which is distinctly competitive with the railroads, claimed 317,000,000 passengers for 1925, and 497,000,000 for 1929, an increase of 180,000,000, or nearly 57 per cent.

"In this four year period railroad passenger traffic dropped markedly, falling by about fourteen per cent. These losses in railroad passenger traffic, of course, have been due mainly to the increased personal use of automobiles by the American public, and that is unequivocably a natural economic factor with which the railroads cannot find fault. As to the growth of automotive passenger bus traffic, especially of the longer haul type, however, it is entirely proper to ask to what extent and under what conditions is this competitive with the people's railroads and is a factor in their loss of revenue.

"The foregoing figures while not advanced as having strict comparability, are suggestive data indicating the trend of things. They, moreover, suggest the need for more definite information and a searching study of this shift that obviously is taking place, particularly to determine whether directly or indirectly government attitude is in effect, unfairly aiding this newcomer in the field of transportation as against the other.

"Equally suggestive is the data relating to highway motor truck freight traffic as a competitor with the railroads. It is reported that at some important Middle Western points local railroad shipments have virtually

disappeared. Livestock shipping routes up to two and three hundred miles from some of the great centers have been taken away from the railroads by the highway motor trucks. Even perishables, such as butter and other dairy products, are being shipped from Wisconsin to New York in refrigerator trucks at twenty per cent below rail rates. It is said that over two thousand trucks a day crowd the hundred miles of highway between Philadelphia and New York laden with freight the railroads used to carry. Shoes, cotton, fruits, raw materials and finished goods, non-perishables and perishables for which great equipment outlays have been made by the railroads, are now being carried for short-hauls and long-hauls of a thousand miles or more by highway-using trucks. We see them operating singly, in fleets—and even with trains of trailers that enable them to pass beyond the less-than-carload freight field and enter into carload competition with the railroads.

Why Trucks Are Able to Compete

"These facts are suggestive, especially where it appears that motor-bus passenger and truck freight rates are below rail rates. They call for the relentless analysis of just the conditions under which this competitive threat to the earning powers of the railroads is able to operate. For instance there is the basic question of rights of way. Railroad rights of way in major part represent tremendous unescapable capital investments. In addition to this large capital investment for rights of way the railroads have also heavy current costs to meet on them. They pay every day a million dollars in taxes and most of this is on their rights of way. Also they spend daily over two million dollars additional for the proper maintenance of way. These are all factors in determining railway passenger and freight rates.

"These facts raise some definite questions as to the economic conditions under which the motor buses and the motor trucks use the public highways as their rights of way.

"Are the motor buses paying for their rights of way or meeting any portion of such a capital expenditure? Or do they get their rights of way free? Do they contribute their full share of the creation and upkeep of the public highways proportionate to room they consume on them and the wear and tear and damage they cause to them? Do they make any rate concessions to the government or develop basically new economic values that reimburse the government or the public for any direct or indirect aid that may be extended to their commercial success and profit as a result of their being given free rights of way, as did the western railroads in return for land grants?

"And finally do they regard carefully the convenience, rights, safety and lives of others, of individual motorists particularly, in using the public highways as rights of way?

"These are fair questions and they deserve sound answers. We may answer some of them directly—and we may hold others in abeyance and ask for careful investigation for them so as to arrive at the true facts.

Roads Made Less Serviceable to Automobilists

"First, we may say, that the motor buses have not had to pay for their rights of way in any sense that the railways paid for the greater part of theirs. They have simply taken possession of public highways built by public funds, both state and national. And they have extensively made those highways vastly less comfortable, less safe and less serviceable for private motorists and others who are contributing chiefly to their creation and maintenance.

"There are 660,000 miles of surfaced highway in the United States built by state and nation at a cost of $22,000 a mile, to which now are chiefly applied the funds coming from general motor vehicle license fees and gasoline tax receipts, although a large portion of these roads were built originally from general taxation. In 1929, motor ownership and operating license fees and taxes in the nation totalled 930 million dollars. This large sum came from private automobiles, commerical cars and trucks and motor buses. There were in the United States in 1929, a total of 26,500,000 motor vehicles of all kinds. Of these about three and a half million units were trucks. Only 92,500 classed as motor buses, which, therefore, made up considerably less than half of one per cent. Thus, although motor buses pay higher tax rates than private cars, the great bulk of this total payment of over 900 million dollars in motor fees and taxes were paid by private automobile owners, not by the purely commercial traffic vehicles.

"This leads us to ask that an answer also be found for the question whether the portion of highway upkeep contributed by motor buses and trucks, with their wide swinging bodies, their headlong speed and their arrogant drivers who often know no rules of the road but their own, is commensurate with the use, or misuse, they make of those highways.

Private Motorists Discommoded

"Ask any individual motorist whose pleasure or business trips consist too often of dodging away from these traffic monsters, finding himself crowded to the curb or almost into opposing traffic, or suffering disfigurement or serious damage to his car by the swinging bulk from whose rear the driver sits so far that he seldom seems to consider it worth while even to try to make the effort to consider what encroachments on the rights of others he may be committing.

"What is the proper relationship between the wear and damage to publicly constructed highways which the trucks and buses inflict, or the volume of space they consume, and their portion of the taxes applicable to highway upkeep? These, too, are fair questions, worthy of sound answers. Does this not all resolve itself into the simple question of fact as to whether or not motor bus and truck traffic is, in effect, being subsidized by being allowed to escape a proper charge against rights of way and are thereby able to offer a far keener competition against the railroads than they otherwise would?

Searching Inquiry Needed

"It involves the question of how common carrier motor traffic rates would compare with those railroad rates with which they come into competition, if their schedules were based on the equivalent of an added capital investment to pay for the creation of rights of way which they are now getting free, and also if to present operating costs were added the cost of maintenance of way as represented by their fair portion of highway upkeep.

"With such additions to bus passenger and truck rates, would traffic of this type command the same place in public esteem and demand relative to railroad travel that it now does?

"I am not prepared to say what the answers to these questions would be. But I do say they should all be thoroughly inquired into by competent public bodies, both state and national, with a view of determining the equities and basic public economic interests involved, particularly in respect to their effects upon the nation's stake in its railroads.

"I venture to say that such inquiries would show whether it is to the public interest to let things remain

as they are. Or does the situation call for a new basis of motor bus and truck taxes to satisfy the equities of the case? Or again does it call for such drastic action as the exclusion altogether of this traffic from our public general motor highways, and the requirement that, even as the railways, it provide as a part of its own private capital investment its own rights of way, and for its own maintenance of way out of operating income.

Railway Consolidation

"In closing there is one other phase of the railroad problem to which I wish to allude briefly but earnestly and that is the question of sound economic railway consolidations and their helpful effects not only on the railroads directly concerned but upon the general welfare of the nation.

"I am very strongly of the opinion that one of the measures which would help materially to put business back where it belongs is approval of the four-system plan of railroad consolidation as announced recently following negotiations instituted by President Hoover. This plan which allocates eastern lines under four great divisions headed respectively by the New York Central, the Pennsylvania, the Baltimore & Ohio and the Chesapeake & Ohio, is now before the Interstate Commerce Commission for consideration. Its adoption would tend to stabilize the transportation industry, facilitate operation and exert a favorable influence on business in general.

"It is a fact well known to business leaders that our railroads are facing a crisis. Not only do they need protective laws to meet competitive situations arising from increased use of our highways and waterways by other carriers, but they need unification such as the proposed four-system plan provides. Our President has acted wisely in assuming a leadership in this respect and his move deserves the support of every clear-thinking citizen."

I.C.C. Continues Reciprocity Hearings

HEARINGS in connection with the Interstate Commerce Commission's investigation into reciprocity in purchasing and routing (I. C. C. 22,455) were resumed in Brooklyn, N. Y., on March 11, when the purchasing policies and practices of the New York Central were outlined in the evidence presented. The Brooklyn sessions are expected to extend over a week or ten days. They opened with testimony of New York Central purchasing officers who were questioned at length regarding the relations of their department with the New York Central traffic department.

The first witness was C. S. White, purchasing agent of the New York Central for the past 11 years. Mr. White explained that his purchasing authority is limited to the New York Central proper; he functions under the direction of W. C. Bower, vice-president in charge of purchases, who was the second witness.

The New York Central, Mr. White testified, spends approximately $75,000,000 a year for supplies which in the main are purchased by contract. Dining car supplies are not purchased under his direction, Mr. White said, nor are some other items, such as rolling stock, rail, lubricants and draft gears, which Mr. Bower handles personally. At another point the witness stated that no ice purchases for refrigerator cars are handled by his department—these are under the jurisdiction of the operating department whereas the only ice bought through the purchasing department is for use in drinking water and in passenger cars on the Lines West of Buffalo.

Mr. White was next questioned regarding the list of firms from whom inquiries are sought when purchases are contemplated. He stated that any company of good credit standing is included if it makes application; firms are dropped from the list if their products are not satisfactory or if they consistently ignore invitations to submit bids.

Contact with the traffic department on purchases, he continued, is maintained in personal conferences although the purchasing department receives from the auditor of freight accounts a monthly tonnage report. Also some shippers voluntarily submit reports of their traffic routed over the New York Central although they are not requested to do so. The monthly report submitted by the auditor of freight accounts is a statement of carload traffic shipped over the New York Central and lists those shippers of 100 cars or more. It does not show the revenue but does indicate whether or not the traffic is competitive. No report is received regularly from the traffic department, but Mr. White admitted that if his department were in doubt as to the traffic value of a firm, the traffic department would be consulted.

In cases of pyramided traffic reports: i. e., where a firm selling several different commodities attempts to sell each on the basis of its total traffic, thus emphasizing the same traffic in several different sales talks, Mr. White said he would not rely on the recommendation of the traffic department. The witness had never investigated to see whether firms were routing traffic part way over the New York Central and part way over another line in order to use its traffic in connection with sales to both roads. If such a case developed, he said that quality and price would be the determining factors in the purchase involved, while at the same time some reliance would be placed on the judgment of the traffic department. Asked by Examiner Rogers to explain why he said "in that case" in connection with the foregoing statement, Mr. White replied that the words were not meant to indicate an exception since he knew of no instance where price and quality were not the determining factors. Traffic men, he added, often come with requests from shippers desiring to be considered and if the price and quality are equal as between two shippers the firm giving the New York Central more business is favored. Traffic reports from a revenue standpoint have not been considered, Mr. White said, because such would involve too much labor.

Method of Handling Bids

The questioning next turned to the manner of handling bids which have been solicited. Mr. White said that the original low bidder does not always receive the contract for the entire purchase but added that it is always the practice to recognize the low bidder with some of the business. The original low bidder establishes the market price, the witness continued, and he would get the contract if no lower bids were subsequently submitted. Big shippers, however, he admitted, are told that their prices "are not in line" and while the name of the low bidder is not disclosed the shipper is informed that "the market doesn't justify paying more than a certain price." This information is not volunteered and if no shipper approaches with a subsequent offer to lower his bid the original low bidder gets the contract.

Report on Transport in Britain

Royal Commission recommends restrictions on heavy motor trucks—Would appoint advisory transport council

DECLARING itself to be of the opinion that "it is not in the national interest to encourage further diversion of heavy goods traffic from the railways to the roads," the Royal Commission on Transport of Great Britain, in its final report, makes several recommendations for the taxation and regulation of highway freight carriers operating heavy motor trucks. It concludes, among other findings on this subject, that "as a general principle the use of lighter vehicles—say four tons or less in weight unladen—should be encouraged in the interests of the highways and their users, and that the use of vehicles with an unladen weight in excess of four tons should be discouraged."

This final report, entitled "The Co-ordination and Development of Transport," is the third to be issued by the commission since its creation in August, 1928. Its two previous reports were: "The Control of Traffic on Roads," issued in July, 1929, and "The Licensing and Regulation of Public Service Vehicles," issued in October, 1929. In a reference to these latter the commission, in this final report, is "gratified to learn that practically all the recommendations which we made in these two reports were, with commendable speed," incorporated into the statutes. The recommended legislation was embodied in the Road Traffic Act which was analyzed in the Motor Transport Section of the *Railway Age* of December 27, 1929, page 1411.

The report as a whole, including qualifying memoranda of individual commissioners, covers 234 pages; the majority findings are divided into nine chapters and cover such sub-topics as: Railways, Highways, Road Transport, Tramways and Trackless Trolley Vehicles, Canals and Inland Waterways, Harbors, Docks and Coastwise Shipping and the Co-ordination of Transport.

The recommendations regarding weight and taxation of highway freight carriers appear in the Highways section of the report, wherein special attention is directed to heavy motor trucks since the conclusion is reached that "the class of vehicle responsible for by far the greater part of the wear and tear on the highway is the heavy commercial lorry, particularly when traveling—as it frequently does—at speeds in excess of the legal maximum. It is the combination of speed and weight that has such disastrous effects on the carriageway."

Heavy Vehicles Now Favored

It is the commission's idea that highway users "are not, as a class, paying too much towards the cost of the highway system" but it nevertheless makes recommendations "on the subject of the relative proportions paid by the various classes of mechanically propelled vehicles." The term "heavy commercial lorry" is defined as synonymous with "heavy motor cars" as classified in the Road Traffic Act, 1930. This classification is as follows:

No. of wheels	Legal Maximum Weight Unladen Tons	Laden Tons
4	7¼	12
6 (rigid)	10	19
(articulated)	9¾	18½
8 (rigid)	11	22
(articulated)	9¾	22

For speed restrictions on the foregoing vehicles the commission would retain, without further alteration, the schedule embodied in the Road Traffic Act. This schedule follows:

Heavy motor cars	Maximum Speed Miles Per Hour
(1) When not drawing a trailer	
(a) if all the wheels are fitted with pneumatic tires	20
(b) if all the wheels are not fitted with pneumatic tires but are fitted with soft or elastic tires	16
(2) When drawing a trailer	
(a) if all the wheels both of the drawing vehicle and of the trailer are fitted with pneumatic tires, or if the trailer is attached to the drawing vehicle by partial superimposition in such manner as to cause a substantial part of the weight to be borne by the vehicle and all the wheels both of the drawing vehicle and of the trailer are fitted with soft or elastic tires	16
(b) if all the wheels both of the drawing vehicle and of the trailer are not fitted with pneumatic tires but are fitted with soft or elastic tires	8
(3) In any other case	5

Proposed Restrictions

The commission's recommendations dealing with weight limits and taxation on heavy motor vehicles are as follows:

We recommend that no heavy motor car should be allowed to exceed 10 tons in weight unladen; that the maximum laden weights should not be increased; and that the maximum weight on any wheel should not exceed four tons.

While we recognize that in certain circumstances heavy loads must be carried by road, and that for this purpose the vehicle with six and eight wheels has advantages over that with only four, we recommend that, as a general principle, the user of lighter vehicles—say, four tons or less in weight unladen—should be encouraged in the interests of the highways and their users, and that the use of vehicles with an unladen weight in excess of four tons should be discouraged.

Apart from actually prohibiting the use of vehicles over four tons in weight unladen—a course which we do not propose—the only means of effectively discouraging their use is to increase the licence duty payable. We recommend, therefore, that the amount of duty payable in respect of these vehicles should be increased. Further, as we observe that a flat rate is applied to all vehicles exceeding 5 tons in weight unladen, we recommend that additional steps at each ton should be provided for the purpose of taxation, and that at each step there should be a substantial increase in the duty payable. We do not purpose to recommend the adoption of any particular scale, but we see no reason why the duty payable in respect of a heavy motor car with an unladen weight between 9 tons and 10 tons should not be as high as £120 per annum.

Gasoline Tax Eight Cents a Gallon

It should be pointed out, in connection with the foregoing proposal of a £120 ($584) annual tax on large motor trucks, that operators of motor vehicles in Great Britain are subjected to a tax of 4 pence (about eight cents) per gallon on gasoline. Assuming that heavy vehicles average five miles per gallon and operate about 50,000 miles a year, the annual assessments in gasoline taxes per vehicle thus amount to an $800 charge in addition to the forementioned proposed registration fee of $584.

No More Arterial Roads

Other recommendations regarding highway policy suggest that the building of new arterial roads be suspended while future activities are concentrated on (1) the complete reconstruction of existing roads; (2) the widening of roads; (3) the improvement of road junctions and lines of sight; (4) the construction of by-pass roads;

(5) the strengthening of weak bridges; (6) the freeing of toll roads and bridges and (7) the progressive reconstruction of built up areas.

Regulation of highway freight carriers, the commission believes, should include a placing of these operators under a system of licensing to be administered by the Area Traffic Commissioners, brought into being by the Road Traffic Act, 1930. Only those carriers employed by but one firm would be exempt. The proposed licensing system would be much less comprehensive than that applied in the Road Traffic Act to highway passenger carriers; it contemplates license requirements only as to the fitness of the vehicle and the wages and conditions of service of persons employed in connection therewith.

Railways

The general conclusions on railways find British railways in difficulties because of the continued depression in business and because of highway competition. The former is held to be the more important difficulty although it is pointed out the "Road competition must continue to affect the railways adversely." It is suggested, however, that railways seem to have forgotten "the truth of the doctrine that facilities create traffic" as the report proceeds to suggest that "If the railways desire to prevent further losses in passenger traffic, their schedules should be thoroughly overhauled and the whole of the services should be speeded up and made more convenient to the traveling public." The summary of conclusions and recommendations continues on this point as follows:

It is in the short and moderate distance journeys that the railways have lost passenger traffic by failing to make full use of their capacity for speed. It is remarkable that there has been practically no improvement in locomotive speed in this country during the last 80 years.

Special fares for excursions, etc., are too often hedged about with special conditions. The public objects to irritating conditions. A general revision and lowering of fares by the railway companies would do far more towards the recovery on their passenger traffic than the methods adopted by them at present.

Railway companies should be placed under a statutory obligation to provide a seat for each passenger who joins a main line train at its starting point. With regard to passengers joining a train at other stations on the route, the companies should make greater efforts to find seating accommodation.

No criticism of railway policy is included in references to the closing of unremunerative branch lines and the average car load although it is suggested in connection with proposals to make use of larger freight cars that the railways "make a real endeavor to meet requirements of trades such as the iron and steel industry which definitely ask for improvements in this particular direction." Next it is a matter of some surprise to the commission that "containers are not more generally used; greater progress might be made in this direction." No recommendation is made on freight car ownership or on freight rate classifications but a final paragraph suggests that present requirements in connection with financial and statitstical returns "should be reviewed with the object of seeing whether the number of returns might not be reduced and their form simplified."

In its final chapter on the Co-ordination of Transport the commission makes no specific recommendations. It does, however, suggest the appointment of a permanent Advisory Council on Transport to assist the Minister of Transport in connection with co-ordination problems. "The principal duty of this Advisory Council" the report states "should be to study transport problems—both in the country generally and in particular areas—and to advise the Minister as to the action which he might usefully take to promote the co-ordination, improvement and development of transport generally."

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended February 28, which included the Washington's Birthday holiday, amounted to 682,000 cars, a decrease of nearly 14,000 cars as compared with the preceding week. It was also a decrease of 217,498 cars as compared with the corresponding week of 1930 and of 296,201 cars as compared with 1929. The corresponding weeks, however, did not include the holiday, which was observed this year on February 23. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week ended Saturday, February 28, 1931

Districts	1931	1930	1929
Eastern	160,411	201,661	232,515
Allegheny	139,029	183,657	196,537
Pocahontas	39,979	49,261	58,716
Southern	108,228	143,208	147,593
Northwestern	81,349	110,936	118,881
Central Western	96,961	130,044	143,705
Southwestern	56,043	80,731	80,254
Total Western Districts	234,353	321,711	342,840
Total All Roads	682,000	899,498	978,201
Commodities			
Grain and Grain Products	41,050	45,104	46,505
Live Stock	20,050	25,854	25,515
Coal	125,499	135,475	192,577
Coke	7,782	10,303	14,084
Forest Products	33,223	61,792	64,004
Ore	5,730	8,771	10,682
Mdse. L.C.L.	198,569	251,868	255,706
Miscellaneous	250,097	360,331	369,128
February 28	682,000	899,498	978,201
February 21	713,938	827,560	905,503
February 14	720,689	893,140	957,498
February 7	719,053	886,701	955,981
January 31	719,281	898,835	947,154
Cumulative total, 9 weeks	6,326,222	7,753,451	8,315,792

The freight car surplus for the period ended February 23 averaged 653,787 cars, including 330,481 box cars, 250,491 coal cars, 31,122 stock cars and 15,467 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 28 totaled 47,719 cars, an increase of 256 cars over the previous week but a decrease of 12,255 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
February 28, 1931	47,719	28,179
February 21, 1931	47,463	28,795
February 14, 1931	48,035	29,181
March 1, 1930	59,974	38,094
Cumulative totals for Canada		
February 28, 1931	412,355	246,588
March 1, 1930	501,975	328,836
March 2, 1929	545923	374,842

A SUDDEN DECREASE IN PASSENGER TRAFFIC on the Swiss Federal Railways has given rise to a proposal to further reduce the prices of family tickets. Families of four, which were formerly considered too small to benefit by the special reductions, are now the center of attention, as it is claimed that families of four are likely to travel by automobile. Family tickets are issued over week-ends and on holidays, but must be applied for at least a day in advance by filling out special blanks. The final reduction would amount to 23 per cent on a 50-kilometer (31-mile) journey, according to Commerce Department reports.

A Coal Train on Its Way to Harrisburg

Efficiency Increased by Operating Changes

Reading showing in gross ton-miles per train-hour improves

IN 1927, the Harrisburg division of the Reading averaged 29,000 gross ton-miles per train-hour, which figure was increased to 31,104 miles for the first six months of 1928, 31,910 for the second six months and 31,506 for the year. For the first six months of 1930, however, this division averaged 34,858 miles, and, for the last six months, 36,317 miles, or an average of 35,547 miles for the year.

In the meantime, of course, the factors of freight train speed and freight train tonnage, which go to make up this showing, were also showing comparable increases. The gross tons per train, excluding locomotive and tender averaged somewhat less than 2,400 in 1927. This factor remained practically constant during 1928 and 1929, at just over 2,500 tons, but, in 1930, the yearly average was 2,647 tons, the month of August, for example, showing an average of more than 2,800 tons. Freight train speed, which in 1927, averaged 12.3 miles per hour, was 12.5 in 1928, and 13 miles in 1929, while 1930 shows an average of 13.4.

The Harrisburg Division

These results were obtained by a revision of operating methods to produce greater tonnage per train, by a reduction in the number of train stops, which has increased the average train speed, and by the inauguration of statistical charts by divisions, which enable the superintendent to analyze his operations, and, further to present the accomplishments graphically to his subordinate officers and to the employees. The detailed figures of the improvements are shown in the chart reproduced with this article.

The eastbound gross ton-miles on the Harrisburg Division are almost two and a half times the westbound gross ton-miles. Therefore, the operating methods used to obtain greater train loads necessarily applies principally to the eastbound traffic. The statements following relate particularly to this traffic in the direction of heavy loading.

In order that specific methods and results might be outlined, the Harrisburg division was selected for the purpose of this article. This selection was governed, first, by the fact that this division handles approximately 30 per cent of the traffic of the entire Reading system, and, second, because certain operating advantages taken in conjunction with certain other operating handicaps, made it an ideal proving ground for experimentation and study of the methods used in increasing the production of gross ton-miles per train hour.

The division includes the main lines between Reading and Harrisburg, 53.4 miles, and between Harrisburg and Lurgan, 42.7 miles, with three branches of 6.5, 7.5 and 30.9 miles, a total of 141 miles. Some idea of the traffic handled may be obtained from the fact that the traffic density on the Reading averages two to three times as great as that of the Class I railways as a whole, and the Harrisburg division is one of the busiest on the system. The operation of freight trains on the Harrisburg-Reading line is also complicated considerably by the fact that 14 first-class trains are operated in each direction daily.

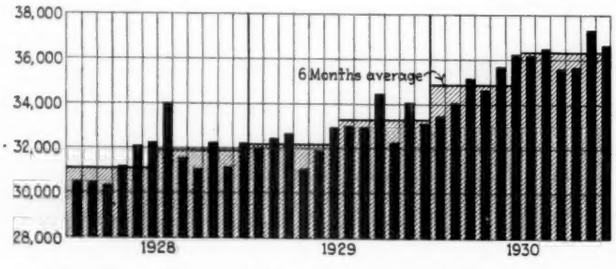
The traffic handled consists of general merchandise and a large movement of bituminous coal, principally on its way to tidewater. The division also includes

Rutherford yard, one of the largest classification yards in the country, both in point of area, and of cars handled. A description of the operation of this facility appeared in the *Railway Age* of October 1, 1927, page 629.

Increasing Tonnage

Since the campaign was begun and the charts were supplied so that an accurate measure of performance was available, every effort has been made to increase tonnage in general, but there are certain specific changes in operating methods that have played an important part. The arrival of 11 new and larger engines, with a rating of 6,200 actual tons, as compared with the previous maximum rating of 4,850 tons, has aided materially in some respects. However, it has been the practice for years to run locomotives through on the coal trains in connection with both the Pennsylvania and the Western Maryland, as described in the article previously referred to, and, in the latter case, it is impossible, because of bridge restrictions, to operate the new and heavier power in the through runs. However, an arrangement has been worked out whereby the locomotives, with a rating of 4,850 actual tons, and which, previously, handled only their rating, are now handling an average of between 7,000 and 7,200 actual tons per train.

This was done in the following manner. From Lurgan, where interchange was effected with the W. M.,



The Rising Trend of Gross Ton-Miles Per Train-Hour

to Lees Cross Roads, 6.2 miles, there is a practically steady climb of 0.5 per cent. With the exception of a few "sags," the line then drops down into the Susquehanna Valley at Harrisburg. From this point to Rutherford yard, 5.5 miles, there is another climb out of the valley. These two ascending grades were the limiting factors in keeping down the tonnage rating of these locomotives.

The W. M. brings the trains into Lurgan with double-headers. An arrangement was worked out whereby one of these locomotives then drops back to the rear of the train and serves as a pusher to the summit of the grade at Lees Cross Roads, cutting off there and returning to Lurgan the W. M. being paid on an engine hour basis for this service. When the train arrives at Harrisburg one of the yard engines serves as a pusher to Rutherford. It has not been neccessary to put on additional yard engines at Harrisburg for this service since the yard engine that happens to be least crowded with work at the moment is used.

These trains, as a result of careful dispatching, make the same or greater speed than was made with the lighter tonnage. On November 22, 1930, for example, a train consisting of 100 cars of bituminous coal, 7,313 actual tons, made the run in slightly less elapsed time than the lighter trains which were run under the former system, on a day when comparable conditions prevailed.

Operating efficiency governs in running these trains, and no attempt is made to establish records. However, with favorable conditions, an engine formerly rated at 4,850 actual tons, or 5,500 tons adjusted tonnage, with a 10-ton factor for each car, handled a train consisting of 109 cars of bituminous and one car of merchandise, or 8,603 actual tons, in good time, and without the slightest mishap.

Increasing Train Speed

The increase in train speed has been brought about largely by the elimination of stops. A year or two ago, a special committee made a thorough investigation, with the idea of having stops for water made only when it was necessary and excellent results have followed the continuing campaign that was then inaugurated. The importance of eliminating unnecessary water stops on the Lurgan line is indicated by the fact that it is a matter of almost daily necessity to run these 7,000 to 8,000 ton trains at relatively short intervals; for example, the train sheets checked show a train departing at 11:23 p. m. and another at 11:51 p. m. Assuming that an unnecessary water stop had been made at any one of several places by the first of these trains, both trains would have been delayed a considerable period.

The maintenance forces also co-operate by getting a line-up of the heavy tonnage trains and so arranging their work as to avoid the necessity of flagging such trains. It is only in rare instances that the trains are now stopped by the maintenance forces.

The signal locations, originally adapted to the needs of a division handling trains of from 30 to 50 cars, have been studied and modernized to meet present operating conditions. This involved the relocation of numerous signals, and, in one case, an entire interlocking plant was torn out and relocated.

Careful dispatching has also played a considerable part in eliminating stops. Trains operate eastward out of Rutherford to six different terminals. On the eastward trip, the classification is such that the through trains have few, if any, set-off cars for intermediate points. On the return trip, however, from terminals which do not have the volume of traffic that is available at Rutherford, these through trains, in the requirements of service, must take whatever cars there are in these terminals for points on the Harrisburg division With such industrial centers as Lebanon and Hershey between Reading and Harrisburg, frequent set-offs, with attendant train stops, are necessary. The set-offs, however, are carefully policed by the dispatchers, and, dependent upon service requirements and other factors, two to four cars for various destinations are frequently set out at one place, for delivery by the local trains, thus eliminating two or three stops for the through trains.

Another factor in eliminating stops has been the change in braking practice. Originally, on heavy descending grades, the brakes were applied and the train came to a full stop. This would happen to each train two or three times in each run. This method was changed, and, by the use of 12 to 15 retainers on a 7,200 ton train, the brakes were operated on the so-called "cycling" method, keeping the braking power at the head end.

Recently, however, a braking system was inaugurated, which, after thorough tests, is proving satisfactory in every respect. The train line is now overcharged, permitting a sufficient leakage to allow the brakes to apply. Then, when they are ready for release, a 20-lb. reduc-

tion is given to insure against sticking brakes, after which the brakes are released. What actually happens under this system is that, on the first 10 to 12 cars, the brakes do not leak on, but from that point to the 60th or 70th car, they are on. The more braking power desired, the more the train line is overcharged, and the braking power is produced in the middle of the train, where it is the most effective.

Employees Aid Campaign

The weekly and monthly statistics, and particularly the charts, supply a graphic illustration of the results accomplished, or, if there is a retrograde trend, they permit an analysis of the situation which will show what is wrong and where improvements can be made. These results are checked by means of fixing a goal or budget of gross ton-miles per train hour in advance, for each six months' period. On the Harrisburg division, copies of each current chart are posted on bulletin boards in 25 places. In addition, the supervisory officers discuss the charts at their meetings with the men. In this manner, a keen interest in the showing has been created and the officers and employees of the Harrisburg division are working co-operatively to continue the good work already done in increasing the gross ton-miles per train-hour.

Depression Obscures Effect of Reduced Rates

THE effectiveness of two-cent passenger fares and "class" rates, which have been in effect during January and February as a means of stimulating travel, has been entirely obscured by the general business depression which has caused passenger travel to decline as much as 30 per cent on some of the railroads. At the same time the $50 coach rate which was established between California and Chicago on January 1 has created a variety of rates among motor coach operators and as a result the operators of the larger companies are now willing to agree upon a differential providing the railroad rate is increased. When the railroads established the $50 rate, the larger motor coach operators reduced the fare to $38.50, a differential of $11.50 while some of the smaller operators made a rate of $28.50 and thus jeopardized the business of the larger motor coach operators.

On the St. Louis-San Francisco, which placed a two-cent fare good in coaches, in effect on the entire system, on February 1, the sale of tickets has shown a substantial increase at some points, while at others there has been a decided decline. As an example, the sale of tickets at St. Louis showed a marked increase. According to J. R. Koontz, vice-president in charge of traffic of the Frisco, the apparent results of the test during the first month are encouraging, but are not definite. After a period of 90 days, the effectiveness of the rates should be manifested.

W. J. Black, passenger traffic manager of the Atchison, Topeka & Santa Fe, believes that the $50 coach rate and the $65 tourist sleeping car rate established between Chicago and California on January 1, have made it possible for his road to secure some business which it would not have carried otherwise. As an example of the effectiveness of the coach rate, the Santa Fe has added additional coaches to its fast mail since January 1.

C. A. Cairns, passenger traffic manager of the Chicago & North Western, states that so far there has been no definite proof that the low coach and tourist rates from Chicago to California and to the Northwest Pacific coast and the two-cent rates placed in effect on certain lines, have or will secure a large volume of new business. He does not think low coach rates can stimulate the 80 per cent increase necessary to offset the reduction in revenue resulting from the lower rates.

W. B. Dixon, general passenger agent of the Chicago, Milwaukee, St. Paul & Pacific, reports that the two-cent rates now being used on certain parts of the system and the coach and tourist fares between Chicago and the Northwest have not stimulated much business. The heavier passenger movement on this road occurs during the summer months and conclusions should be withheld until the rates are in effect during those months.

L. M. Allen, vice-president and passenger traffic manager of the Chicago, Rock Island & Pacific, does not anticipate any pronounced increase in travel due to the coach and tourist rates from Chicago to California nor due to the two-cent rates which the Rock Island placed in effect between certain points which compete with the Frisco. His opinion is based on his experience with excursion rates which stimulated a heavy movement when first tried but secure only a moderate volume of passengers when placed in effect at regular intervals.

According to Ralph Budd, president of the Great Northern, two factors militate against the reduction of fares from 3.6 cents to 2 cents per mile on this road. In the first place the Great Northern does not have many branch lines to which the lower fare can be applied and in the second place the Great Northern has placed reduced fares in force on several of its divisions in recent years and in each instance they resulted in decreased income.

During January and February travel from Chicago to California on all roads decreased 20 per cent as compared with the same period last year and in contrast to a 5 per cent decline experienced in January and February, 1930. Business moving to the Pacific Northwest during January and February was about 10 per cent less than that handled in the first two months of last year. During January, 20 per cent of the California business moved in coaches, 10 per cent in tourist sleeping cars and 75 per cent in standard sleeping cars. Of the traffic to the Pacific Northwest during January, 25 per cent moved in coaches, 10 per cent in tourist sleeping cars and 65 per cent in standard sleeping cars. With one exception, no additional equipment was necessary to handle the traffic during January and February, while one train operated between Chicago and Kansas City and providing coast service was discontinued on March 1.

Of the various ticket offices on the Chicago & North Western which showed increases due to the two-cent rate, only one experienced an appreciable volume and an analysis showed that many of these purchases were made by patrons who normally would have bought through tickets at the point of entraining. On the Chicago, Milwaukee, St. Paul & Pacific, several stations showed an increase in ticket sales but the largest increase was only 25 per cent.

On February 20 and again on February 27, the Southern Pacific established a round trip fare equal to about one cent a mile. On the first day, when passengers could take advantage of Washington's birthday, there was a substantial movement of traffic but on the second day the business was only slightly above normal.

Motor Transport Investigation

Railroads urge equalization of competition through regulation and taxation

WASHINGTON, D. C.

THE final hearings in connection with the Interstate Commerce Commission's investigation of the co-ordination of highway transportation with other forms of transportation, which were begun on March 4 before Chairman Brainerd and Attorney-Examiner Leo J. Flynn, have continued daily, with the exception of Saturday and Sunday, and are expected to run through the rest of this week. The concluding sessions have been devoted to testimony on behalf of eastern and southern roads and general testimony by government witnesses and representatives of organizations.

Thomas H. McDonald, chief of the Bureau of Public Roads, testifying on March 5 at the request of the commission, made some rather sweeping statements to the effect that the gross weight of trucks and buses has little effect on the cost or the wear of a properly constructed highway and that in his opinion, with the increased taxation in recent years, they are fully meeting all the excess cost of road construction made necessary by the increased loads. Under cross-examination he admitted, however, that the general standard of road construction is higher than would be required for more than 90 per cent of the traffic. In 1929, he said, 81.9 per cent of the income of the main state highways came from fees and gasoline taxes paid by the road users including the 18.2 per cent provided from bond issues, which he said are almost wholly supported by fees and gasoline taxes.

Traffic Survey in Western States

He also gave the results of a traffic survey just completed by the bureau, in co-operation with the state highway departments of eleven western states, for 1929-1930, which he said showed that not exceeding 16 per cent of the total traffic on the highway is truck traffic, while not over 1½ per cent is common carrier traffic. Of the 16 per cent which was truck traffic 5.5 per cent was common-carrier traffic and 8.7 per cent was contract trucking. The survey, he said, was made by field parties that took the data from the individual vehicles as they passed various observation stations throughout a year, including 180,000 separate trucks, 85 per cent of which were privately operated. Common-carrier trucks, he said, appear to operate about four times as frequently as other trucks. The states were: Arizona, California, Colorado, Idaho, Nebraska, New Mexico, Oregon, Utah, Washington and Wyoming. Based on 10,000 miles operation for a year he said that the total taxes paid for a three-ton truck in these states averaged $108.70 for a private truck operated by the owner; $132.98 for a contract truck and $195.66 for a common-carrier truck, including fees and gasoline taxes, and based on the mileage usually operated, he said a three-ton truck pays 3½ times as much as the average vehicle. In these western states over two-thirds of all the trucks were under two tons capacity and there is a tendency toward the use of lighter trucks, but also one toward the use of trailers.

Mr. McDonald gave the results of some impact tests conducted in a Washington street for a period of years to show that with pneumatic balloon tires the surface application of the weight of a truck is so much greater than that of a seven-passenger car that the stress on the road is reduced and that not until the load exceeds that of a five-ton (net load) truck is it necessary to increase the thickness of the concrete road slab. An 8 per cent increase is necessary above five tons, he said and a 15 per cent increase is necessary when the net load reaches 7½ tons. The bureau believes, he said, that the maximum wheel load should be limited to 9,000 pounds, but that if heavier loads are to be used the number of wheels should be increased so that the axle load will not exceed 18,000 pounds. The figures were based on the assumption that 80 per cent of the load may be on the rear axle. "The roads we are building today," he said, "our tests show will stand 18,000 pounds per axle and if one wheel is 46 inches from the other there is no overlap of stress. The only increase I can see necessary in the strength of roads is that for trucks of five tons or more and in my judgment the heavier trucks and buses, by the higher taxes they are paying and particularly the gasoline taxes, are fully meeting all excess costs made necessary by the increased loads. So far as the building of our main state roads is concerned, the relatively small amount of common-carrier usage makes very little difference. We would build about the same anyway. Wherever the use of trucks and buses runs high we have a concentration of population which also increases the private use.

"Motor transportation of all kinds fits into a very different field that cannot be filled by either the railroad or the waterway and is so flexible that it will defeat any form of uneconomic regulation which will merely cause it to change its form. In general where taxes on the common-carrier vehicle are high or above the average the usage of that type is also below the average."

Mr. McDonald was cross-

Highlights of the Testimony

Chief of U. S. Roads Bureau admits highway construction standards are higher than needed by 90 per cent of the traffic.

Railway pays 33 per cent of gross revenues for roadway expenses and taxes—buses and trucks pay but 5 and 10 per cent respectively. Private motorists forced to contribute toward facilities for buses and trucks.

Regulatory measures for commercial users feebly enforced.

Gasoline tax not a fair gage of highway use. Highway expenditure concentrated on a few good roads—if there were no heavy vehicles, same expenditures would provide a much greater mileage of good roads.

Army says railways must be protected as backbone of our national defense.

examined by Fitzgerald Hall, vice-president and general counsel of the Nashville, Chattanooga & St. Louis, who sought to show that the weight of the heaviest vehicle is critical factor in rural highway design. Mr. McDonald said that it was rather the concentrated wheel load in proportion to the surface of impact, but that the quality of road necessary to meet climatic and soil conditions is also a factor. He minimized the wearing effect of the vehicles by saying that the rubber tires take more wear than the road. He also said that up to 45 miles an hour the speed makes little difference provided the road is made for a speed of 25 miles, and that within the limits as to gradient and curvature recommended for safety the tests on a Washington street were not unrepresentative of rural road conditions. When Mr. Hall pointed out that the federal contributions to highway construction do not come from gasoline taxes Mr. McDonald said that 75 per cent comes from income taxes but that the federal government has collected more in the way of special taxes on motor vehicles than it has spent on federal-aid highways. When asked what had caused the destruction of the road between Washington and Alexandria he said it might have been built with poor concrete or that illegal loads might have been transported over it. The bureau is now making a study of the utilization of trucks by commercial houses to learn what loads are considered necessary.

Manufacturers Oppose Truck Regulation

Pyke Johnson, Washington representative of the National Automobile Chamber of Commerce, said that with respect to regulation of the motor vehicle in coordination with or independent of other transportation agencies as common carriers in interstate commerce, no facts have been brought forward in the present investigation which have changed the attitude of its members. They continue to believe that regulation of the bus as an agency in interstate commerce is desirable in the public interest. They have not yet seen any facts which indicate that regulation of the truck as a common carrier in interstate commerce is practicable or that it is desirable in the public interest. Further they are emphatically opposed to any taxation or regulation of any motor vehicle which is undertaken solely for the purpose of "equalizing competition."

Rail, bus and truck operations are not comparable, he said, and, as truck operations are largely privately owned, no method has yet been suggested whereby competition could be eliminated if it were desirable in the public interest to eliminate it.

Mr. Johnson said that the increase in motor taxes has decreased railroad taxes devoted to state highways until they have become a negligible factor both in their relation to rail taxes as a whole and to the state highway program and that of the special taxes paid by motor vehicle owners, trucks and buses pay around 25 per cent of the total or about $250,000,000 although the vehicles are only about 12 per cent of the total registration.

Railway Pays One-Third of Gross for Roadway and Taxes, Trucks Only 5 Per Cent

A remarkably complete and graphic picture of the effect of virtually unregulated motor competition upon a railway almost completely paralleled by modern new highways, constructed in part by funds provided by the federal government, was presented on behalf of the Nashville, Chattanooga & St. Louis by Fitzgerald Hall, vice-president and general counsel, and Charles Barham, Jr., vice-president in charge of traffic, who occupied the witness stand through most of the session on March 6. He presented a series of exhibits of photographs, maps and statistical data showing the history and cost of the highway construction, in Tennessee, the methods of operation of the motor vehicles, the effect on the railway traffic and the differences between the actual regulation of the railways by the state and federal government and the alleged regulation of the motor traffic by the state utilities commission. Mr. Barham showed that while the N. C. & St. L. pays out 33 per cent of its earnings for taxes and the maintenance of and interest upon its roadway, the trucks in the state are paying but 5 per cent of their earnings for the same purpose and the buses only 10 per cent. He showed that the state roads in Tennessee are being built to standards far more extensive than would be required for ordinary traffic upon them and that the common-carrier motor vehicles are paying far less than their proportion of the cost of building and maintaining the highways, while he also advocated that they be required to pay in addition to ordinary taxes something in the nature of a rental for the use of public property as a place for doing business analogous to the rental paid by a railroad for the use of another's tracks. He said that as a private motorist he is paying the state $80 a year in fees and taxes, a large part of which represents a personal contribution to the expense of motor transport operation which is taking away a large part of the business of a railroad that was already providing adequate service. The buses and trucks are taking away so much of the short-haul freight and passenger traffic of the railways, he said, that the rates for through service must soon be greatly increased if the railways are to survive.

Existing Regulatory Laws Unenforced

After outlining in detail the expenses to which railways are put by regulation he outlined those nominally imposed on intrastate motor transport by the state laws but showed that they are honored more in the breach than in the observance; that the state commission allows many operators to operate without certificates and does not require them to adhere to even the sketchy tariffs which they file. He pointed out that practically all of the motor routes parallel the railway and that the state commission has seldom denied a bus or truck operator a certificate on the ground that the territory was already adequately served by railway but that it has often denied certificates to protect existing bus or truck operators against competition of their own kind. In conclusion he outlined a system of federal and state regulation which he said should be applied to motor vehicle operation. He said it is not to be assumed that the Interstate Commerce Commission would have given its necessary approval for the building of a line of railroad paralleling the N.C. & St. L. in the way that the highway operations do.

"The contribution of highway common and contract carriers to construction cost and maintenance of the highways," Mr. Barham said, "whether represented by gasoline, privilege or other taxes, is but a small per cent of the aggregate construction cost and maintenance of highways, although the construction and maintenance costs sufficient to carry at high speed the heavy loads of common and contract carriers are greater than would be necessary for proper use of the highways by individuals. This concentrates expenditures on a few roads, whereas if the construction was such only as to accommodate the needs of ordinary traffic, a much larger mileage of good roads would ensue to the ordinary user."

Giving detailed statistics to show the diversion of traffic from the railway by stations, Mr. Barham said he could

almost construct a highway map of the state from them, because where the railway is not paralleled by a motor route its business has been maintained or increased but where it is "the business has gone out of the window." He also showed that much of the loss of traffic is a net loss because it has not been possible to reduce train service proportionately although many trains have been taken off.

In discussing the subject of taxation he showed that in 1929 the N.C. & St. L. paid in special levies for road purposes $109,564 and that it also paid large taxes to the federal government, which is aiding in the construction of state roads. While the state gasoline tax was recently increased to 5 cents a gallon, he showed that a large part of the cost of the roads had been incurred before that time.

Illustrating the loss of passenger traffic he showed that while the company handled 5,922,169 passengers in 1918, although this was said to be abnormally high, the number had been reduced to only 680,347 in 1930.

Trucks Pick Their Traffic

Common and contract carriers on the highways of Tennessee, he said, compete only for traffic of their own selection and decline to haul all traffic and to serve all points. Some such carriers, although receiving certificates from the commission on the theory that they are common carriers, provide in their tariffs that they will transport not for the public but for certain favored and enumerated concerns only. The effect is to require the railways to maintain a service which could, with little greater expense, handle all the traffic now moving to railroad points by highway carriers. Considerable amusement was created by his descriptions and photographs of some of the tariffs on file with the Tennessee commission, some of which merely offer to charge "railroad rates". One such tariff said that "if other than railroad rates adopted when service is more thoroughly figured out, schedules of rates will be filed with the commission." These tariffs, moreover, Mr. Barham said, are evidences of the hopes of the operators rather than of the charges they actually collect.

Mr. Barham described an experiment made by the company of reducing passenger fares on part of its line, which led to an increase in the number of passengers but not in the earnings and led to so many complaints of discrimination that it was discontinued.

Another point made was that while the railways of the state spend large sums represented by a 50 per cent division of the cost of separating grades on state and federal aid highways, no direct contribution is made by the highway carriers to this cost.

"The effect of the competition of motor carriers on highways," he said, "is to reduce the operating revenues of the railways competing with them, to increase their operating ratios and to reduce employment, purchasing power and returns on investment in railroads. These results, unless corrected, will ultimately reduce the value of railroad stocks and bonds in the hands of owners and make it difficult for the railways to secure capital for growth and development."

Since 1921 the N.C. & St. L., according to one exhibit filed, has had a deficit of $14,898,357, or an average of $1,489,836, under its "fair return" of 5¾ per cent.

Mr. Hall said that all his company wants is "equality before the law" and that if under such equality "the commercial carriers can drive us out of business, all right."

A similar presentation, applying particularly to Kentucky and Alabama, was made by J. G. Kerr, assistant to the vice-president of the Louisville & Nashville, which is also almost completely paralleled by motor bus and truck lines and has lost to them a large volume of business, to such an extent that it has had to reduce its number of employees, close stations and reduce train service. Between 1925 and 1929, he said, trucks took about two-thirds of the company's less-than-carload business away from it and in Kentucky they have also taken a large amount of carload traffic. Out of each dollar earned by the L. & N. he said, over 31 cents goes for taxes, maintenance of way and structures and return on the investment in roadway, whereas such figures as are available indicate that the buses and trucks do not pay anything like that proportion of their earnings for the facilities contributed to them by the public. He cited certain reports showing that a large number of bus lines in Alabama pay only 11.33 per cent of their earnings for taxes of all kinds, including special fees for the use of the highways as a place of business, while 12 common-carrier truck lines pay something less than 9.35 per cent and he showed that Alabama requires a tax of 1 per cent on the gross earnings of common-carrier trucks and 3 per cent on those of buses which are not applied in many other states.

Mr. Kerr, in conclusion, advocated a policy of reduced regulation of railways and increased regulation of motor transportation in order to bring about an equality of treatment between different agencies of transportation and a discontinuance of "all forms of subsidies of our competitors." Pointing out that almost everything the railroads do is regulated by the Interstate Commerce Commission, he said that conditions now are vastly different from what they were when the regulatory laws were enacted and he urged repeal of the commission's power to suspend rates for seven months pending investigation, an interpretation of section 3 of the interstate commerce act so that under it the commission may condemn only unjust discriminations; a repeal of section 4 so that railways may meet competition where it exists without being penalized where it does not exist, that railroads be allowed but not required to establish joint rates and through routes with motor transport lines, and that they should be permitted to substitute their own motor service for rail service in whole or in part. By way of regulation of motor lines he advocated that, with exceptions, only one independent bus or truck line be permitted to operate between fixed termini; that such lines be required to publish and maintain rates and fares and to furnish regular and satisfactory service; that contract truck carriers be required to charge not less than the published rates of common carriers and that buses and trucks licensed in one state should not be permitted to operate for hire in other states unless they subject themselves to the regulations of the other states.

"So far as concerns our ability to meet competition, we find ourselves in a sort of a straight jacket," said Mr. Kerr. "While we here advocate equality of treatment with, and discontinuance of all forms of subsidies for our motor competitors, we feel that there should be recognized the obvious fact that the rail carriers no longer have, if they ever had, any monopoly in the transportation of freight and passengers."

"The railroad I represent", he said, "does not dispute the economic need for motor truck and bus operation. We strongly contend, however, that their operations should be entirely free from any form of subsidy, that the inter-city operations of all trucks and buses should not only be required to contribute their full share of the taxes necessary to maintain the states, counties. municipalities and school districts through which they operate, but that they should, through licenses or some form of payments, pay a fair return on the investment

in the public highways, particularly the whole of that part of the cost of modern highways incurred by reason of the heavy and fast-moving trucks and buses and the maintenance thereof, dependent, of course, upon use."

Mr. Kerr said that buses are "pretty well regulated" in Kentucky but that regulation of trucks is practically nil. He also showed by maps that it is difficult for the L. & N. to substitute truck or bus service for its own in order to reduce train service because there are so many points on its rail lines that could not be served in that way. In reply to published statements by the National Automobile Chamber of Commerce that the railroad contribution to road taxation is negligible he showed in detail the taxes paid by the L. & N. which are specifically for road purposes as well as those paid to counties and school districts to which in most cases the motor lines do not contribute. He also said that motor operations are not confined to the state highways but extend to others which are largely supported by general taxation.

"We contend," he said, "that the operations of the motor truck and buses should rest wholly upon their own bottoms, in exactly the same manner as those of their rail competitors. If this be accomplished and more flexibility is permitted in rail operations, then each class of service will stand on its own merits. Under these conditions we believe there will be a proper field for each class of service. We are not asking any favors but merely equality of treatment."

Mr. Kerr was cross-examined at length by Larue Brown, representing the National Automobile Chamber of Commerce, who asked what would prevent large shippers from operating their own trucks privately if regulation should raise the rates of common-carrier trucks. Mr. Kerr replied that his suggestion that all trucks be required to pay their proportion of the cost of constructing and maintaining the highways would tend to meet that situation. He admitted that the gasoline tax was devised on the theory that it would represent the proportion of use of the highway but said that it did not work out that way. He said that the proper proportion could only be determined by a very careful study, which he said he had not made. Mr. Brown asked if he were not advocating an advantage for the railroad in asking that it be allowed to substitute motor transport for its own rail service that but only one other motor truck operator be given a permit for a given route. The witness thought not because he said the railroad was already in the field and would not represent new competition. He admitted that regulation might increase the rates to the shipper but insisted that that would merely require him to pay directly what someone is now paying indirectly through taxation.

Railroads Needed for National Defense

Co-ordination of all forms of transportation, with the railroads as the arterial backbone, was advocated by Lieut. Col. Brainerd Taylor, assistant to the Quartermaster General of the Army, in charge of the motor transport branch of the transportation division. "Our arterial railway system," he said, "is the backbone of our national and international commerce and of our national defense. All other forms of transport are for us but extensions and auxiliary services, none of which should be permitted to weaken or retard the development of a national system of arterial railways. The fundamental basis of a national system of transportation policy is obviously an arterial system of railways with due regard to the relation of terminal areas to trunk line operations and to the co-ordination of rail, water, air, and highway transportation. The present trend, wherein railroad organizations appear to be forced in competition to develop motor transport in co-ordination with their own railroad operations should not be stopped but rather encouraged. In this connection it is believed that no new laws or regulations that would restrict the development of a co-ordinated transportation system would be consistent with the public interest in national defense, but rather existing laws that might retard such development should be modified." Lieut. Col Taylor said that in 1921 when a general tie-up of railways was threatened by strikes, it was proposed in Washington by automotive interests to duplicate the procedure in England where railroad transportation was successfully replaced during the general railroad strike in that country by highway motor transportation, but that it had been found that the number of trucks then in existence represented not more than 3 per cent of the railway capacity at that time and he estimated that the present capacity of the trucks is only about 5 per cent of that of the railways.

Atlantic Coast Line

Testimony as to the effect of motor competition on the traffic of the Atlantic Coast Line was put into the record on March 10 by J. W. Perrin, freight traffic manager, and W. H. Howard, general passenger agent. Mr. Perrin described a detailed check of the traffic taken by motor trucks last year which showed a known loss of $4,985,616 in freight revenue, or about 10 per cent of the total, from which he estimated that the company had lost over $6,500,000. The contract truck was responsible for 38.91 per cent of the loss, the private trucks for 37.78 per cent and the certified common-carrier trucks for 23.31 per cent. Experience has shown, he said, that reduction of rates to meet truck competition is of doubtful effect because under the present unregulated status of the motor carrier and with the use of the public highways on terms practically equivalent to subsidies, it is impossible for the rail carriers to compete except by making rates below cost. Mr. Howard showed that since 1916 local passenger traffic has been reduced by 85 per cent, while interline traffic has been reduced 28 per cent. Some of the decrease was caused by depressed business conditions, he said, and most of it was lost to private automobiles, but a substantial part of it went to buses, most of which charge lower rates than the rail rates.

C. E. Childe, of the Omaha Chamber of Commerce, appearing on behalf of the National Industrial Traffic League, opposed any regulation of truck traffic, saying there is no demand by shippers for such regulation and that this class of carrier furnishes a service not comparable to any other form of transportation. He said that only a small proportion of the trucks could be regulated but that the "fly-by-night" operator is being gradually eliminated.

J. A. Streyer, general traffic manager of the American Short Line Railroad Association, spoke in favor of the regulation of rates, rules and practices of interstate motor carriers.

W. H. Swinney, comptroller of the West Penn Electric Company, told of that company's experiences in the operation of buses and electric railways and advocated a policy of federal regulation.

Testimony of Electric Lines

Testimony on behalf of electric railways was presented on March 11 by Charles R. Mahan, comptroller, and Charles E. Thompson, vice-president, of the Chicago, North Shore & Milwaukee, and Thomas Conway, Jr., president of the Cincinnati & Lake Erie. Mr. Thompson described in detail the motor competition faced by

his road, saying that the operations of the buses and trucks are inadequately regulated by the states while there is no federal regulation, and describing the efforts made to meet such competition. He said that the company had had considerable success since it adopted a "ferry truck" service, by which complete trucks are loaded on special flat cars and driven off to serve off-line stations, but he objected to the difficulty of meeting competition by motor operators which can make their rates what they please and take only what traffic they choose to take. He was cross-examined by Mr. Brown in an apparent effort to induce him to admit that the only effect of more regulation of motor vehicles would be to increase the rates paid by the shippers and that if this were done the large shippers would put on fleets of their own trucks. Mr. Thompson said that there would not be so many truckers competing for business and cutting rates if they were regulated, and that regulation would pave the way for a co-ordinated service in which each class of transportation would confine itself to the class of service for which it is most fitted.

British Report on Automatic Train Control

THE report of a special committee of the Ministry of Transport, Great Britain, reviewing its study of automatic train control during the past five years, and recommending for use on the British railways the automatic train control and cab system now in operation on the Great Western, was noticed in the *Railway Age* of December 27, page 1385. This committee, headed by Sir John W. Pringle, was composed of leading British railway engineers, and elaborate investigations were made throughout the kingdom. The report endorses the general principle of automatic train control but makes no recommendation for governmental action other than the general statement that the study of the subject ought to be continued. There is no suggestion of compulsion of any kind.

Following are notes on details of the report not touched upon in our earlier notice.

References to automatic train control systems in use in America consist only of brief sentences telling what inquiries were made and giving reasons for not favoring any of them. Data furnished by the Interstate Commerce Commission are said to have been of great service to the committee. The delicacy of the apparatus on the locomotive, the possibility of failure of electric current supply, and other defects developed in operation are held to be likely to cause serious delays in traffic on British lines of dense traffic. The committee consulted W. K. Howe, chief engineer of the General Railway Signal Company; and from the English representative of the General Railway Signal Company received a proposed ramp scheme for introduction on British railways to give three indications, but the system has not been tried and no opinion is expressed as to its value. The Westinghouse Brake & Saxby Signal Company proposed the continuous control system of the Union Switch & Signal Company and offered to install a system for experimental purposes on a section of railway in Great Britain. The Hudd system, intermittent inductive control, is mentioned and the committee is informed that its principle had been tried on the Wabash and on the Missouri Pacific. The Hudd system as now presented to the committee may be tried on the Southern Railway of England.

The committee investigated the crocodile system used on the Northern of France but rejects it as giving no proceed indication and as not disclosing its failures. The Rodolausse system, which has been tried on the Paris & Orleans, was tried on the Great Western of England but is not approved. The Regan system, in use on the Rock Island, was considered but is held to be too costly. Mr. Raven's system on the London & Northeastern has been in use on that road for 30 years on 154 miles of track, but it is purely mechanical and gives no indication when the signal is clear; and so it is not further considered.

The Radiovisor system, making use of the effect of selenium in the transmission of light, has been tried by the Great Western and it gave correct audible results but it is believed that the running costs would be prohibitive, especially as regards current consumption. The committee believes that this non-contact apparatus represents no advantage in economy or reliability over well-known contact systems. Reference is made in this connection to the selenium apparatus which is in experimental use in Germany on the State Railroads, but it was decided that this was too costly and complicated; and it is still in the experimental stage.

The electric and electro-pneumatic trip apparatus in use on the London Underground lines, is held unsuitable for speeds above 50 miles an hour and also because no indication is given when the line is clear. It is also doubtful whether English roads could afford to provide suitable clearances for such a trip stop.

Finally, continuous control, like that of the Union Switch & Signal Company, would give better results than any other system, but the expense is "very great." The additional safety as compared with present conditions on British Railways would not justify the heavy expenditures. Practically the same decision is given against intermittent American systems; and invitations to visit America have been declined.

"Direct" and "Indirect" Methods

The system in use on the Great Western of England, a ramp with a plunger shoe, is recommended as the only one thus far proved suitable for use in Britain, and this is called a "direct" method of increasing safety. This system is sufficiently reliable, even under snow and ice conditions, for general adoption. A "direct" method is preferable; but the report then goes on to examine at considerable length "indirect" methods which are to be recommended where "direct" methods for any reason cannot be introduced. Locomotives, cabs and windows could be arranged so that steam and smoke would be less troublesome; roadside signals could be put in better positions, and especially could be reduced in height; the illuminative and penetrative power of signal lights can be improved; correct focussing of the light is essential. Electric signal lights have been in use for three winters in England with such satisfaction that fogging services have been dispensed with at such signals. However, the general extension of electric lights depends on further cheapening of electric current. Oil lamps, long burning, seem to have found little favor, but it is held that they can be improved.

Locomotive firemen should be examined thoroughly on the reading and meaning of outdoor signals. Fogmen should be always within easy call; they should always be first assigned to the distant signal. Signalmen in cabins should have more scientific rules and arrange-

ments to decide when fog is dense enough to require the employment of fogmen.

Summarizing its conclusions the committee begins with a prefatory remark that the standard of security on British Railways has been fully maintained during the past eight years (the percentage of serious train accidents having been reduced somewhat). The committee nevertheless believes that "progressive action" is desirable and then says, as noted above, that increased security can most reasonably be attained by "direct" action and that "in our opinion, direct means are generally to be preferred." Considerable space is given to the safeguarding of stop signals where the usual automatic train control is not applicable; and the committee would favor (as, for example, where an engineman starting from a station or junction may disregard a signal before he has moved more than a short distance) a control trap; or torpedo placers; or catch points, or derailers. This is followed by the recommendation of indirect methods. It will be for each railway to determine what it must do. "On railways where considerable expenditure has already been incurred, it is obviously desirable that the system in use should be extended" [this applies to the Great Western alone]. The exploration of the general question of automatic train control should be actively continued.

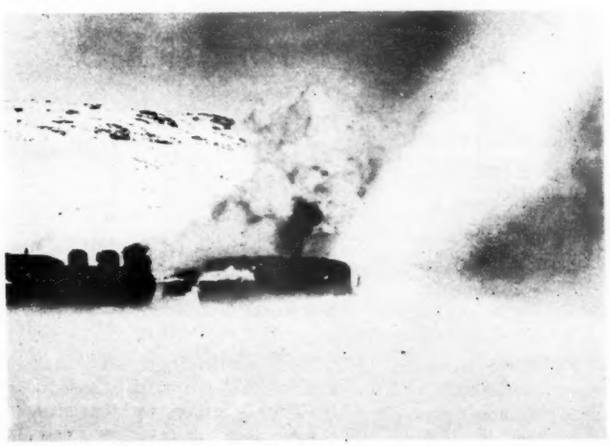
Appendices to the report show British train mileage, accident increases and decreases, etc., condensed from the records of years since 1911; information concerning A.T.C. in America, and record of signal facilities in England today. This last shows:

Length of track 25,363 miles; number of signal boxes, 9,413; number of distant signals 24,674, of which 2,225 have fixed arms; number of stop signals 55,120; number of steam locomotives, 22,903; number of motor vehicles, 1,156. These totals are made up from the reports of the four principal railways; the Great Western, the Southern, the London, Midland & Scottish, and the London & Northeastern.

The approximate cost of apparatus, of the type of control recommended (the Great Western), is given as follows: a dead ramp £15; ramp with insulated wiring to signal box £70; ramp with uninsulated wiring £55; locomotive with warning effect only £25; dual warning and clear effects £52.*

* The Great Western System, as noted in our issue of December 27, is being extended by that company this year, hundreds of miles. The option described in the *Railway Age* of January 17, page 193.—EDITOR.

* * *



Wilse, Oslo

A Rotary Snow Plow in Action on the Norwegian State Railways

Looking Backward . . .

Fifty Years Ago

It is now thought that the third railway across the continent, the Northern Pacific, will be completed in two years. The fourth line, the Atlantic & Pacific [now part of the Atchison, Topeka & Santa Fe], is pushing steadily westward, and will probably reach the Pacific in four or five years. Operations have begun on the fifth transcontinental line, that of the Union Pacific, to Oregon, and it is expected that it will have a connection with the Pacific coast within two years.—*Railway Age*, March 17, 1881.

On May 10, 1869, less than 12 years ago, the last spike was driven connecting the Union Pacific and the Central Pacific [the latter now part of the Southern Pacific] and completing the first railway across the continent. The great event was heralded by celebrations and rejoicings over the country. On March 9, 1881, half a dozen men connected with the construction department of the Atchison, Topeka & Santa Fe drove a silver spike for the last rail connecting that road with the Southern Pacific at Deming, N. M., and completing another all rail route from ocean to ocean. The telegraph records the event in a dozen lines, closing with the words, "There was no further demonstration."—*Railway Age*, March 17, 1881.

Twenty-Five Years Ago

The New York Central has added to the conveniences of the Twentieth Century Limited by installing a telephone service which may be used from the train up to the time of departure. The instrument is placed in the observation car and connection may be made with local and long distance lines for 15 minutes before the train leaves.—*Railway and Engineering Review*, March 17, 1906.

The efforts of the Illinois Central to effect an entrance into Birmingham, Ala., with its own line are about to be realized. Trackage contracts have been made with the Mobile & Ohio and the Northern Alabama, both controlled by the Southern, and with the St. Louis & San Francisco, which will enable the Illinois Central to gain an entrance into the rich Birmingham district by building 80 miles of line between Corinth, Miss., and Haleyville, Ala. These contracts provide for the joint use of the Mobile & Ohio tracks from near Jackson to Corinth, the Northern Alabama tracks from Haleyville to Jasper and the St. Louis & San Francisco tracks from Jasper to Birmingham, where the Illinois Central is to have its own terminals. Contracts for the construction between Corinth and Haleyville have been let and the work is to be completed within a year.—*Railway Age*, March 16, 1906.

Ten Years Ago

Henry Ford has been elected president of the Detroit, Toledo & Ironton.—*Railway Age*, March 11, 1921.

The action of the Erie in ordering reductions in the wages of its track laborers, the re-establishment of the seven-day week for train dispatchers and the deduction of one day's pay from all employees, without negotiation with the men affected, was condemned by the United States Railroad Labor Board in a decision on March 2. Employees of the Atlanta, Birmingham & Atlantic [now the Atlanta, Birmingham & Coast], the first carrier to come before the Board to justify a reduction in wages, on March 5 went on the first "authorized" strike since the board was created. About 1,500 men walked out and traffic on the road is at a standstill. Some of the men have returned to work on the Missouri & North Arkansas, where a strike has been in progress since February 25, and normal service is gradually being resumed. The general manager has announced that hereafter the M. & N. A. will be operated as an "open road."—*Railway Age*, March 11, 1921.

Communications and Books...

Famed Eastern Farmer Pays His Respects to Buses

MIDDLETOWN, N. Y.

TO THE EDITOR:

The other day I seen one of them big passenger buses which daily pass through Middletown make a sharp turn at one of the congested corners. The bus operator blew his horn—which I bet was heard down your way—and then a fleet of good local boys just had to back up and give this here monster the necessary leeway. And so tonight I thought I'd write you a little piece about it and ask you right to your own face when this intolerable condition of affairs will terminate.

Here is some foreign concern operating a fleet of buses—with each coach about the size and weight of a railroad freight car, remember—right through this town of ours and not alone making us little fellows climb up on the sidewalk or halt at their approach, but wearing out our expensively constructed city thoroughfares, besides, without paying a plugged nickel. Why, the whole proposition is preposterous, says I.

And I also want to call your attention, good Mr. Editor, as well as your customers too, who are taxpayers like myself, to intolerable conditions existing on our state highways, 'cause these arteries of travel are fast becoming not alone far from enjoyable to navigate over but decidedly dangerous as well, as when them big juggernauts comes along, blowing their calliopes, unless us farmers almost climb up on the banks of the road and get out of the way—well, I guess you can imagine the rest.

And when you consider that these highways were built by us farmers' taxes—which were earned by more'n the sweat of our brows—and then realize this hogging the roads, besides remembering that these here buses and trucks pay no direct taxes and that their only contribution is through a small license fee and a small gasoline tax—which the state collects and is most liberal with in paying sinecurists—I feel sure you'll publish this protest.

As you have heard me say before, Mr. Editor, about 30 per cent of the travel over our state highways is by us farmers and the remainder 70 per cent is by these big motor buses and heavy foreign trucks. And about 90 per cent of the wear and tear to our highways is caused by these here foreigners.

And when you think of the thousands and thousands of good hard earned dollars that we've spent at one time or another in the past on building many bridges hereabouts (and some of the bridges are not yet paid for, by darn) and to realize that they'll soon have to be rebuilt so that these ponderous juggernauts can slam over 'em at 60 miles an hour, I'll bet you will say my outcry is justified.

Notwithstanding the fact that these here motor buses and trucks escape their share of proper and adequate taxation, I notice that the railroads don't so easily escape, as the assessors take good care of that, by golly. And this was most forcibly called to my attention recently when I seen the local assessors here looking over the newly painted cars of a certain little branch line here with a view to jacking up valuations. Approaching this intrepid, valiant, and extremely conscientious bunch I says, just kindly softly like, "Don't you boys honestly think you oughta allow that about bankrupt road a chance to come up for air?"

And what do you think one of them birds says to me, good Mr. Editor? Well, I'll tell you in a whisper. He says, "Say you poor old damphool farmer, don't you appreciate the fact that every additional penny we get from these corporations just so much reduces your own taxes?"

And while I didn't say nothin' in return, Mr. Editor, I says to myself that while they'd been jacking up the valuations of these here railroads year after year, my taxes in the meanwhile hadn't been lowered but increased, by heck.

HOMER M. GREEN.

Heavy Local Drayage Charges Make Truck Line-Haul Possible

WASHINGTON, D. C.

TO THE EDITOR:

I am enclosing two l.c.l. freight bills. Please note on the one from Fostoria, Ohio, that the drayage charges are 95 cents and the freight charges only 71 cents. The other shipment arrived at the same time and the drayage charges on that one were 70 cents, and the freight charges 91 cents.

The freight station is only about one mile from here, and Fostoria, Ohio, is five hundred forty-four miles from here. Assuming drayage and freight charges on the same basis would make the drayage charges five hundred forty-four times more than the freight charges.

Yet the same trucking company which hauled these shipments from the freight station to our place of business advertises that it can haul from Washington to Baltimore, Philadelphia and New York at rates less than the railroad charges. When these figures are properly calculated it seems like magic that they be so economical at one time and so high on local hauling. It seems as if the only recourse open to the railroads is that they immediately commence store-door delivery for l.c.l. shipments.

GEO. C. SHAFFER, INC. (Florists).

Estimates Gone Awry

GLENSIDE, PA.

TO THE EDITOR:

For the first time in six years, the annual estimate of railroad traffic made by the methods described by the undersigned in the *Railway Age* of May 17, 1930, failed to forecast with desirable accuracy the traffic of 1930. Although total carloadings for the first six months of the year varied less than one per cent from the estimate, and even up to the end of the fortieth week the total was still within five percent of the estimate, the total for the year differed by more than eight and a half per cent.

FORECAST OF REVENUE FREIGHT CARLOADINGS, REVENUE TON MILES AND GROSS REVENUES FOR THE UNITED STATES FOR THE YEAR 1931

	Carloadings (Thousands)			Revenue Ton Miles (Millions)		Gross Revenues (Millions)	
Month	No. of Weeks	Monthly	Total to Date	Monthly	Total to Date	Monthly	Total to Date
Jan.	5	3,576	3,576	27,532	27,532	$462	$462
Feb.	4	2,950	6,526	25,602	53,134	351	813
Mar.	4	3,179	9,705	29,241	82,375	410	1,223
Apr.	5	3,954	13,659	26,337	108,712	391	1,614
May	4	3,390	17,049	29,599	138,311	415	2,029
June	4	3,611	20,660	29,710	168,021	436	2,465
July	5	4,413	25,073	31,322	199,343	451	2,916
Aug.	4	3,849	28,922	34,098	233,441	480	3,396
Sept.	5	4,947	33,869	35,476	268,917	489	3,885
Oct.	4	4,107	37,976	39,087	308,004	512	4,397
Nov.	4	3,736	41,712	34,483	342,487	462	4,859
Dec.	4	3,288	45,000	31,513	374,000	441	5,300

For 1931 it seems likely that carloadings will total between 43,500,000 and 46,500,000. An estimate based on the intermediate figure of 45,000,000 is given on the attached sheet, which also includes estimates of revenue ton-miles, and gross revenues.

WILLIAM AUSTIN.

New Books

Proceedings of the Traveling Engineers' Association.—Edited by W. O. Thompson, secretary, 1177 East Ninety-Eighth street, Cleveland, Ohio. 460 pages, 6 in. by 8½ in.

The table of contents for the 1930 proceedings of the Traveling Engineers' Association is so arranged that a ready reference to the remarks made by an individual after the presentation of a paper is found directly under the page reference to the subject discussed. The papers presented were on air brakes, frictional bearings, fuel conservation, locomotive piping, long locomotive runs, and the motive power of tomorrow. Several pages are devoted to a list of past presidents and the subjects discussed during their administrations.

The Successful Control of Profits, by Walter Rautenstrauch, professor of industrial engineering, Columbia University. 234 pages, 5 in. by 8 in. Bound in cloth. Illustrated with charts and diagrams. Published by B. C. Forbes Publishing Company, 120 Fifth Avenue, New York. Price, $3.

Written with the idea that the activities of all business enterprises—and of manufacturing enterprises in particular—can be analysed in such a way as to furnish guides and measurements no less accurate than scientific formulae, this book helps to remove many of the unknown quantities too often present in business. Although interested primarily in cost—and particularly in that part of cost which is indirect and therefore hardest to ascertain and allocate—and the importance of proper cost accounting in any successful system of profit control, Professor Rautenstrauch makes good use of his opportunity to bring out other ways in which scientific methods may be used to good advantage in the field of business. He shows how all phases of a business may be subjected to careful analysis; demonstrates that many of the characteristics of an enterprise may be learned by studying the relations between costs and selling price; points out what balance sheets and profit and loss statements may be made to reveal, and outlines a practical budget system—a method of control which he appears strongly to favor.

It is his chapters on cost, however, that will undoubtedly be of most interest to men engaged in manufacturing in or for the railroad field; and concerning them, William C. Dickerman, president of the American Locomotive Company and author of the preface, says: "As one grows old in industry, he becomes aware that a true cost, under the varying conditions of trade, is almost as rare as the dodo. . . . . Blessed, then, be the man who makes a true cost grow where one has not existed before, and blessed be the authority who plants the seed—this Professor Rautenstrauch has done. . . . . In simple, lucid style he analyses the bases of true costs and builds therefrom a comprehensive system of cost control, including methods of budgeting, which is altogether admirable."

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

A Century of Wood Preserving. Edited by Sir Harold Boulton. A group of papers showing the development of wood preserving, especially creosoting. 150 p. Pub. by Philip Allan & Co., London, England. 8 shillings, sixpense.

Descriptive List of Bureau Publications, March, 1931. List of publications of the Bureau of Railway Economics now available on request preceded by a brief sketch of the origin and work of the Bureau. 8 p. Pub. by Bureau of Railway Economics, Washington, D. C. *Apply.*

The Real Philadelphia. A pictorial and descriptive booklet including a section on Philadelphia's "highly perfected system of transportation." 40 p. Pub. by Philadelphia Business Progress Association, Widener Bldg., Philadelphia, Pa.

Regulation of Stock Ownership in Railroads, Part I-III. House Report No. 2789, 71st Cong., 3d Session. Popularly called "Splawn Report on Holding Companies." Vol. I contains report of Dr. W. M. W. Splawn, Special Counsel, legal study on Constitutional power of Congress, discussion by James Bonbright on whether railway holding companies should be outlawed and analyses of individual railroads. Vol. 2 gives findings from examinations of accounts and records of certain holding companies, and Vol. 3, sketches of notable holding companies. Summarized with abstracts in *Railway Age*, February 28, 1931, p. 449-457. 3 vols. Pub. by U. S. Govt. Print. Off., Washington, D. C. $1.65.

Selected Book List for the Office Library of an Industrial Relations Executive, prepared by Industrial Relations Section, Department of Economics and Social Institutions, Princeton University. The titles are grouped under such headings as "General Works," "Personal Administration," "Trade Union History and Policies," and "Labor Legislation" and there are subject and author indexes. 24 p. Pub. by Industrial Relations Section, Princeton University, Princeton, N. J. *Apply.*

Statistical Summary of Investment and Operating Figures Reported in Questionnaire by Class II and Class III Steam Railways, Electric Railways, and Carriers by Water, Subject to the Interstate Commerce Act. In connection with Docket No. 23400, Coordination of Motor Transportation. The summary for Class I railways was noted in the Booklist for December 13, 1930. 12 sheets. Pub. by Interstate Commerce Commission, Washington, D. C. *Apply.*

Periodical Articles

Competition in the Transport Industry, by Julius H. Parmelee. Developments in automotive, waterway, electric-railway, air, and pipe-line traffic and hydroelectric power, their effect on rail traffic, and the economic problem underlying them. "Will they, continued over the next half-century, assure the nation that adequacy and efficiency of transportation service that is its due? Will the problem gradually expand into a fight to the finish among the several transport agencies, or will it approach solution through an orderly and intelligent process of co-ordination and adjustment?" p. 181. Mechanical Engineering, March, 1931, p. 177-181.

Construcción de Una Via Férrea en los Andes Colómbianos. An illlustrated account of some difficult mountain railway construction. Anales de Ingenieria [Bogota, Colombia], December, 1930, p. 441-446.

Electrification of Modern Transportation. A series of eleven illustrated articles on recent electrifications on steam railroads, developments in electric locomotives, with an unusual editorial on railroads and economic and social conditions. General Electric Review, March, 1931, whole issue.

Los Hermanos Clark, by Alfredo Ortega. Sketches of the careers of Matthew and John Clark who were pioneers in railroad extension in South America. They also projected and built the first telegraph lines between Valparaiso and Buenos Aires (1869-1872). Anales de Ingenieria [Bogota, Colombia], December, 1930, p. 425-430.

New Methods of Rail Transportation. Illustrated description of mono-railways, the Bennie Railplane, and the new German "Zeppelin on rails"—methods of transit designed to make speeds of about 100 miles per hour, with economic and financial comparisons. Mechanical Engineering, March, 1931, p. 190-191.

Safety from Cellar to Attic, by Mollie Amos Polk. "According to the calculations of the National Safety Council, the intrepid homecomer faces dangers which caused, last year, about twenty-three thousand deaths and countless more or less serious accidents." p. 440. The article suggests measures to make homes safer to live in. American Home, March, 1931, p. 440, 462.

Odds and Ends . . .

Railway Twins

The Frisco employees at Oklahoma City claim some sort of record for railroaders at one point who are parents of twins. E. A. Couch, signal maintainer, is the father of six-months old twin boys; Dr. R. L. Murdock, company physician, has a son and daughter, 22 months old; W. F. Long, hostler, has twin daughters age 4; Clyde Whitney, pumper, has twin sons, aged 5 months; D. L. Jackson, car carpenter, has twin sons aged 6; and J. H. Lewis, fireman, has twin daughters aged 6 months.

Railway Nomenclature

It is not only in this country that the railways possess a special language of their own. In Germany, for example, there are possibly as many railway terms that differ from the ordinary language as there are in this country. For example, a slow train is known as a "Bummelzug" which corresponds to our own designation of such a train as "jerk-water." An interesting thing is that they have the same idea regarding secondary lines as we have here, but, instead of calling them "branch lines," they are called "Zweiglinien," which means, literally, "twig lines."

* * *

Bond [redacted]

New-York & Erie R. R. Company.

$1000.

Know all Men by these Presents, That I Millard Fillmore Comptroller of the State of New-York, do hereby assign the within Bond, and all the right, title and interest therein, of the People of the State of New-York, to Davis Brooks & Co or Bearer, in pursuance of the provisions of the Act entitled "An Act in relation to the construction of the New-York and Erie Rail-Road," passed May 14, 1845: and this Assignment is made without any recourse to said State in any event.

In Witness whereof, I have hereunto subscribed my name, this 14th day of December A. D. 1848.

Millard Fillmore
Comptroller

GENUINE
RAILWAY CO.
TREASURER

An Old Railway Bond in Possession of the Union Guardian Trust Company, Detroit, Signed by Millard Fillmore, later President of the U. S.

Art in Dining Cars

The new dining cars of the Boston & Maine contain an exact replica of the doorway of a house in Salem, Mass., which was built in 1828, and is reported to be one of the finest examples of old colonial architecture to be found anywhere in New England.

Railway Tennis Enthusiast

Louis J. Carruthers, assistant general solicitor of the Long Island, has recently been elected president of the United States Lawn Tennis Association. Mr. Carruthers has long been one of the leading lights in the tennis world, in addition to his legal activities in connection with the railway.

Steel Helmets are Hats

The question of whether steel helmets used by the Army are "hats" or "stamped steel ware" has come up before the Interstate Commerce Commission for consideration. The examiner reported that in his opinion the helmets were hats, rather than stamped steel ware, which means that a rate of $2.06 per 100 lb. will have to be paid instead of $1.12 per 100 lb.

A Lexicon of Railway Slang

Belief on the part of some of the older railroad men in the employ of the Central Vermont that the argot of their time will pass when they do, has led to the compilation of an "old timers' dictionary" for the benefit and guidance of the younger men who insist upon calling a caboose a caboose when those of the older generation know such a car as a "van" or a "buggy" or even a "hack" or "saloon." The unique dictionary has been prepared so that the young fellows may improve and add to their railway vocabulary.

Ohio River Navigation

LOUISVILLE, KY.

TO THE EDITOR:

The so-called improvement of the Ohio river to make ready for waterway transportation is producing a terrible effect.

There are some 300,000 human beings here in Louisville and the odor of the water is such as to make one vomit. This is brought about by the locks which have been built to procure a navigable channel, and which turn the Ohio river into a succession of still ponds, on which algae flourish. My memory dates back for 40 years to the drinking of this water, and it has never been like this before. I pride myself on having a strong stomach, but I must say that it is a pretty strong dose for me to take, and when my small children say they cannot drink it, I feel like cussing somebody.

C. W. SHAFT.

Car Steadiness

The Great Western's (Great Britain) new 120-ton trolley "Crocodile L," a special articulated well car for carrying transformers and other heavy loads, gave striking, though accidental, evidence of smooth running when conveying two 78-ton transformers from the British Electrical Transformer Company's works at Hayes to Birmingham, a few weeks ago. While the first load was awaiting dispatch, one of the workmen placed two or three spare bolts on the framework of the truck and forgot to pick them up again. Upon the arrival of the transformer at its destination the bolts were found precisely where they had been placed. The firm's representative thought it would be a sporting thing to see whether the empty truck would carry the bolts safely back to Hayes, and so left them where they were, for the return trip. The arrival of the car at Hayes was keenly awaited, and satisfaction was felt when it was found that the bolts had still not moved from the position in which they had been left.—Railway Gazette.

NEWS

Twenty Million "Dumb-Bells"? *

Private motorists satisfied with low-cost roads—Bus fees a price, not a "tax"

Recreation motorists and farmers operating light trucks are currently besought to help resist state legislation equalizing competition between railways and automobiles for hire. By those interested this element amongst car-owners are told that pending bills would increase their taxes. After reading one of these appeals an acquaintance of mine familiar with drafts pending in many states remarked: "How can all these tourists be persuaded that anyone seeking state legislation would doom it in advance with an increase of tax on motorists? And how can the motorists be kept from reading the bills for themselves? Does any one really suppose 20,000,000 motorists are dumb-bells?"

A farmer making up his mind how much further he cares to invite increase in his taxes for road-building has to decide whether he will favor low-cost or high-cost roads. It appears that emphasis is turning strongly toward the construction of low-cost "farm-to-market" arteries. If a low-cost road is practicable and economical for farmers, why do they tax themselves to lay and maintain high-cost trunk highways? What does the farmer want of a wide and heavy surface costing for installation and upkeep from 25 per cent to 40 per cent more than he needs for his own use? That is where it comes in about his being a dumb-bell. He isn't. He sees with his own eyes that what makes a high-cost road necessary is enormous vehicles that mean nothing in his life except to dodge them and help pay for the high-cost road that they require and for the damage they do the surface.

So with the "pleasure" motorist. In front of him, behind him and passing him are the "20,000,000 dumb-bells" of whom he is one. The whole 20,000,000, they are assured, are taxed more heavily than the railroads. What for? Not for anything they want. A low-cost trunk highway would perfectly well answer their purposes. They are paying more taxes than the railroads to build and maintain a surface a quarter to two-fifths more expensive than their cars require—to

(Continued on page 564)

* Abstract of an address by Frank W. Noxon, secretary, Railway Business Association, before the Richmond (Va.) Traffic Club on March 9.

Signal Section to Meet in New York

The annual meeting of the Signal Section of the American Railway Association is to be held at the Roosevelt Hotel, Madison avenue and 45th street, New York City, on Tuesday and Wednesday, May 12 and 13

Club Meeting

The Eastern Car Foreman's Association will hold its next meeting at 29 West 39th Street, New York City, on Friday evening, March 27. The discussion will be on the A. R. A. Loading Rules, and the principal speaker will be Edward Dahill, chief engineer of the Container Bureau. He will illustrate his talk with motion pictures.

Saskatoon Defeats Natural Gas

The ratepayers of Saskatoon, Sask., have voted down a proposal to grant a franchise to a natural gas company proposing to supply that fuel in that city from the Kinsella-Wainwright field in Alberta. The proposal was vigorously opposed by the Western Canada Fuel Association, an organization of coal interests in Western Canada. Gas interests are endeavoring to extend their operations in a number of Western Canadian cities at the expense of coal.

To Economize in Passenger Train Service

Following the recent meeting of western railroad presidents at Chicago (reported in the March 7 issue, page 520) an intensive study is being made by seven committees, the members of which represent all western railroads, to determine the possibility and practicability of reducing unprofitable passenger train operation. The study, which is being sponsored by the Interstate Commerce Commission, involves all types of service and is giving consideration to the elimination or reduction of duplicate service, the pooling of competing service, a further curtailment of unprofitable branch line service and the substitution of less expensive types of service. While the meeting at Chicago was confined to western carriers, other meetings may be held in other territories and it is possible that all passenger service will be studied.

Shippers Attack Railway Program

New York Conference holds that railways should be complete transportation agencies

Declaring themselves "opposed to direct participation of government in fields of business enterprise traditionally occupied by private agencies," and expressing the view that "the railroads should act as complete transportation agencies, employing railroad cars, motor vehicles, vessels or airplanes," the Shippers' Conference of Greater New York nevertheless went on record by the adoption of a special committee report presented at a meeting held on Tuesday, March 10, as opposed to many of the points set forth in the declaration of policy issued by the Association of Railroad Executives last November.

In its introduction, this report stated that the decline in rail traffic has been due to excessively high rates as compared with those in effect before the war, rather than to the competition of other forms of transportation; and that railway statistics are presented in such a way as to mislead the public as to rate levels, traffic trends and the effects of competition.

In discussing the recommendations of the rail executives, which were published in the *Railway Age* of November 22, 1930, page 1087, the committee expressed itself as sympathetic with the broad purposes outlined therein. "We frankly recognize," the report said, "that the railroads are engaged in a business subject to the operation of economic laws. Our strongest reason for criticism lies in their refusal to adapt their operations to modern conditions by the establishment of store-door delivery. We are keenly aware that railroad operation is a fundamental necessity and that the maintaining of an efficient national system of transportation is necessary; but while accepting these broad principles, we cannot endorse all recommendations which the railway executives make."

The first of the railroad recommendations—a respite from rate reductions and suspension by regulating bodies of action that will increase the expenses of the carriers—was flatly opposed on the ground that "this power constitutes the only protection which shippers have against unwarranted and arbitrary rate changes." The committee also opposed any respite of legislative efforts that would adversely affect rates or increase expenses, "believ-

ing that the adjustment of rate problems is the duty of administrative commissions created for that purpose."

The committee was somewhat more kindly disposed, however, to the recommendation that government competition, through its operation of transportation agencies, be withdrawn. On this point the report read, "In particular we disapprove of the government's operation of transportation facilities in direct competition with privately-owned and operated facilities, and we regard such practice as harmful," but went on to say that, "circumstances may at times justify the granting of subsidies."

On the question of regulation for highways and waterways the report dealt at some length, the general attitude being as follows: "The character of such regulation should be determined solely with reference to conditions existing within the agency for which regulation is proposed, and not by its possible effect upon railroads. We believe that all motor vehicles should be required to bear a proper share of the cost of highway construction and maintenance, and that railroads should be permitted to operate motor vehicles under legislative safeguards. We are opposed to government regulation of port-to-port rates in any manner until conditions in the business of water transportation itself indicate such regulation to be advisable. We believe that the railroads should be permitted to operate water transportation facilities, under such legislative safeguards as would prevent them from using the privilege primarily for the purpose of waging competitive warfare against independent water carriers. Summing up the situation, it is our view that the railroads should act as complete transportation agencies, with the use of various means depending upon the best method of accomplishing economies and of giving proper service.

"In conclusion, it is the further view of the Conference that what this country needs is not more but less regulation and less interference by the government in the business affairs of its citizens. We join with the railway executives in bespeaking an earnest and thoughtful consideration by the public of their statement and of the problems which it raises."

The report was unanimously adopted by the Conference.

Fuel Consumption Reduced

A new record in fuel conservation by locomotives was established by the railroads in 1930, according to reports for the year just compiled. An average of 121 pounds of fuel was required in 1930 to haul one thousand tons of freight and equipment, including locomotive and tender, a distance of one mile. This was the lowest average ever attained since the compilation of these reports was begun in 1918, being a reduction of four pounds under the best previous record established in 1929.

A new record in the consumption of fuel in passenger service was also established in 1930, an average of 14.7 pounds having been required to haul each passenger train car one mile, compared with 14.9 pounds in 1929.

The railroads in 1930 spent $275,213,781 for fuel for both road and yard switching service, compared with $325,813,895 in 1929. They used 97,857,093 tons of coal for both road and yard switching service. In 1929 the amount was 112,951,929 tons. The railroads also consumed in road and yard switching service in 1930 a total of 2,320,252,497 gallons of fuel oil compared with 2,568,800,341 gallons in 1929.

Purchases and Stores Meeting

The Purchases and Stores Division, A. R. A., decided to hold its annual convention in Atlanta, Ga., at a meeting of the General Committee in Chicago on March 11. The exact date of the meeting is yet undecided but it is understood that the sessions will be held during the latter part of May.

Automobiles as Baggage on A. C. L.

Automobiles may be shipped as baggage over the Atlantic Coast Line under a plan recently inaugurated. Travelers desiring the use of their automobiles at destination may purchase five passenger tickets and on three of them ship the automobile, the two remaining tickets being used for the transportation of two persons.

Commemorate Birth of George M. Pullman

Exercises commemorating the centenary of the birth of George M. Pullman, founder of the present sleeping car service, were held on March 3 in the Pullman Free School of Manual Training which Mr. Pullman established, near the Pullman plant, in Pullman, Ill. D. A. Crawford, president of the Pullman Company, and Mr. Pullman's granddaughter, Miss Florence Lowden, daughter of the former governor of Illinois, participated.

New England Shippers' Board

The New England Shippers' Advisory Board will hold its regular meeting at the Hotel Kimball, Springfield, Mass., on Thursday, March 19. J. J. Pelley, president of the New York, New Haven & Hartford, and W. H. Day, transportation manager of the Boston Chamber of Commerce, will speak, discussing the "Declaration of Policy" of the Association of Railway Executives. P. E. Pfeiffer, assistant general manager of the Boston & Maine, will describe centralized train control as in use on the Boston & Maine.

Indiana Bill to Regulate Trucks

An Indiana Senate bill regulating the height, weight, length and lighting of trucks has passed the House of Representatives by a vote of 66 to 23 and is now in the hands of the governor. The bill was introduced primarily to regulate trucks but several industries are affected by certain details. The bill provides that trucks shall not be more than 8 ft. wide and 12 ft. high, while the length of a single vehicle cannot be more than 33 ft.; and combinations of vehicles coupled together shall not be more than 40 ft. long. The axle weight on pneumatic tires shall not be more than 16,000 lb. and on solid tires 80 per cent of the weight on pneumatic tires. The bill becomes effective on January 1, 1932, if approved by Governor Leslie, who, in his message to the legislature, recommended stringent limitations on motor trucks.

Counterfeit Tickets on the Pennsylvania

The arrest of five men at Philadelphia on March 10, on charges of selling counterfeit Pennsylvania Railroad tickets, is said to have revealed frauds on the railroad company extending over a year or more, and amounting to over $50,000. Three of the persons arrested were held in $2,500 bail each and two in $1,000 bail each. The tickets are said to have been sold to passengers between New York and Philadelphia and between Philadelphia and Atlantic City.

N. Y. C. Charged with Giving Illegal Storage

In the United States Court at New York City, on March 10, the Grand Jury, acting on complaint of the Interstate Commerce Commission, voted an indictment against the New York Central on charges of giving excessive free storage at New York City on flour. Thirty counts were charged. The alleged offenses occurred since March 1, 1929. The consignees who are said to have benefited by favors in storage, are mostly baking companies in New York City.

Cargo Through Panama Canal in 1930

Cargo tonnage through the Panama Canal during the year 1930, totaling 27,847,941 tons, showed a decrease of 3,602,552 tons, or 11.5 per cent, in comparison with the previous year. Of this decrease, there was a decline of 2,101,773 tons, or 20.7 per cent, in the Atlantic to Pacific movement, while in the opposite direction tonnage fell off 1,500,770 tons, or 7.1 per cent. The heavy decrease in the former was due to a general decline of practically all the leading commodities usually routed in this direction. While the Pacific to Atlantic traffic showed increases in several commodities, others, particularly nitrates and lumber, registered heavy losses in comparison with 1929.

Revision of Vegetable Rates Proposed

A general revision of railroad freight rates on vegetables, potatoes and cabbage, in carloads, from producing points in Florida to destinations throughout the United States, including both increases and reductions, is recommended in a supplemental report proposed by Examiner Henry B. Ames of the commission following a general investigation undertaken on a complaint filed by the Railroad Commissioners of Florida. The report proposes a finding that the present rate basis will be unreasonable for the future but not for the past, so that shippers would not be entitled to reparation. In the original report in this case the commission made findings with respect to rates on oranges and grape-fruit only and the sup-

(Continued on page 562)

Revenues and Expenses of Railways

MONTH OF JANUARY OF CALENDAR YEAR 1931

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1930.
Akron, Canton & Youngstown	Jan.	171	$152,047	$88	$159,821	$19,272	$16,750	$12,739	$55,118	$15,429	$119,251	74.6	$40,570	$27,246	$15,077	$23,887
Atchison, Topeka & Santa Fe	Jan.	9,649	9,102,235	2,080,313	12,416,278	1,521,454	2,963,281	406,670	4,295,981	434,996	9,646,877	77.7	2,769,401	1,685,319	1,643,397	2,240,100
Gulf, Colorado & Santa Fe	Jan.	1,976	1,180,661	92,271	1,367,681	228,281	363,965	59,247	571,293	77,750	1,300,422	95.1	67,259	—30,454	—145,254	—82,722
Panhandle & Santa Fe	Jan.	1,718	740,067	68,904	876,945	147,622	216,410	20,929	314,555	37,578	732,980	83.6	143,965	87,218	—15,614	102,188
Atlanta & West Point	Jan.	93	102,179	32,722	159,103	23,923	34,068	11,592	70,252	11,704	155,685	97.9	3,418	—8,334	—16,299	24,143
Western of Alabama	Jan.	133	113,307	33,669	165,888	28,029	43,001	11,885	67,658	12,472	166,695	100.4	—807	—11,798	—6,662	39,912
Atlanta, Birmingham & Coast	Jan.	639	246,204	11,474	292,062	78,254	76,268	27,555	146,912	20,204	359,989	123.2	—67,927	—83,919	—100,494	—76,322
Atlantic Coast Line	Jan.	5,161	4,106,880	1,068,241	5,683,511	737,670	1,044,615	170,112	1,988,229	180,764	4,192,323	73.8	1,491,188	991,006	781,765	1,010,559
Charleston & Western Carolina	Jan.	342	193,340	5,191	206,113	37,752	34,502	7,654	86,748	6,570	173,226	84.0	32,887	12,883	9,358	—13,613
Baltimore & Ohio	Jan.	5,653	11,927,703	1,391,157	14,192,574	1,384,570	3,456,943	499,037	5,582,643	732,526	11,805,774	83.2	2,386,800	1,464,717	1,229,142	2,251,253	
Baltimore & Ohio Chic. Term.	Jan.	85	.....	.....	255,816	31,625	34,743	2,356	149,749	18,095	243,094	95.0	12,722	—39,720	54,076	104,246	
Staten Island Rapid Transit	Jan.	23	52,561	108,743	170,387	8,771	14,129	2,155	99,719	16,208	140,982	82.7	29,405	11,405	—1,448	9,879	
Bangor & Aroostook	Jan.	619	723,255	59,161	809,479	147,145	121,625	5,352	198,644	26,655	501,427	61.9	308,052	243,190	229,122	322,586	
Belt Ry. Co. of Chicago	Jan.	53	.....	.....	476,209	21,916	38,104	3,909	222,992	9,610	296,531	62.3	179,678	124,950	148,499	143,843	
Bessemer & Lake Erie	Jan.	227	419,227	3,572	435,359	52,653	303,799	14,377	200,271	37,816	610,495	140.2	—175,136	—207,097	—199,548	—45,611	
Bingham & Garfield	Jan.	33	25,217	.....	25,783	5,919	4,541	1,702	7,633	4,204	24,132	93.6	1,651	—5,340	12,049	21,452	
Boston & Maine	Jan.	2,089	3,240,929	1,088,878	4,989,653	744,578	690,193	81,068	2,016,667	241,115	3,793,486	76.0	1,196,167	969,666	729,489	816,555	
Brooklyn Eastern Dist. Term.	Jan.	11	98,085	.....	99,730	9,313	10,019	816	33,027	5,739	58,914	59.1	40,816	34,453	34,453	43,160	
Buffalo & Susquehanna	Jan.	253	123,352	576	134,737	27,512	39,819	2,051	43,665	7,733	120,780	89.6	13,957	11,857	22,343	19,406	
Buffalo, Rochester & Pittsburgh	Jan.	601	982,253	47,472	1,063,983	142,570	295,268	36,159	476,346	42,549	995,225	93.5	68,758	48,758	76,668	186,559	
Burlington-Rock Island	Jan.	367	128,376	2,514	138,944	30,267	16,987	6,488	61,401	11,844	126,824	91.3	12,120	4,169	—25,988	—75,612	
Canadian Pacific Lines in Maine	Jan.	233	209,181	24,561	246,415	34,888	60,945	7,902	117,362	5,150	226,247	91.8	20,168	8,168	—15,574	—4,424	
Canadian Pacific Lines in Vermont	Jan.	85	76,611	23,150	118,379	11,448	32,600	2,126	81,648	3,218	131,040	110.6	—12,661	—16,681	—45,965	—25,310	
Central of Georgia	Jan.	1,944	1,110,262	195,141	1,497,011	63,638	253,371	67,803	656,431	81,376	1,137,334	76.0	359,677	247,470	234,501	277,967	
Central New Jersey	Jan.	692	2,802,455	539,571	3,546,547	310,884	777,750	54,636	1,506,223	127,858	2,800,316	79.0	746,231	526,031	438,066	658,050	
Central Vermont	Jan.	462	407,151	81,051	542,513	71,077	111,504	16,147	264,416	26,833	491,653	90.6	50,860	31,555	49,860	79,860	
Chesapeake & Ohio	Jan.	3,119	9,637,527	394,232	10,378,013	1,508,230	2,002,214	165,422	2,782,121	386,040	6,870,356	66.2	3,507,657	2,640,623	2,761,647	3,686,248	
Chicago & Alton	Jan.	1,028	1,116,934	334,785	1,614,003	170,149	463,247	70,289	719,595	77,870	1,523,218	94.4	90,785	—23,800	—211,687	61,599	
Chicago & Eastern Illinois	Jan.	938	1,083,307	190,320	1,390,136	192,828	330,532	75,050	643,792	73,643	1,331,543	95.8	58,593	—61,796	—186,325	—31,398	
Chicago & Illinois Midland	Jan.	131	246,319	3,027	256,843	26,791	67,900	19,777	83,054	20,542	218,713	85.2	38,130	29,595	21,299	36,219	
Chicago & North Western	Jan.	8,458	6,121,919	1,349,209	8,427,883	854,879	1,759,402	189,944	3,795,576	387,572	7,043,590	83.6	1,384,293	658,714	506,788	619,709	
Chicago, Burlington & Quincy	Jan.	9,324	8,169,367	1,012,953	10,178,625	847,235	1,772,724	234,830	3,566,007	380,734	6,874,807	67.5	3,303,818	2,371,078	2,109,978	2,089,516	
Chicago Great Western	Jan.	1,495	1,375,409	125,216	1,613,220	151,889	173,250	75,433	662,374	61,775	1,132,026	70.2	481,194	400,179	211,642	124,439	
Chicago, Indianapolis & Louisville	Jan.	647	804,872	112,525	1,016,868	88,855	216,895	34,549	418,773	35,555	805,106	79.2	211,762	143,967	33,150	66,669	
Chic., Mil., St. Paul & Pacific	Jan.	11,322	7,586,439	815,541	9,361,892	897,268	1,963,011	304,207	4,039,061	350,434	7,564,826	80.8	1,797,066	1,006,994	572,344	669,535	
Chicago River & Indiana	Jan.	20	.....	.....	474,102	45,000	40,000	1,944	164,925	15,405	267,274	56.4	206,828	170,101	244,694	266,769	
Chicago, Rock Island & Pacific	Jan.	7,593	6,210,009	980,525	7,999,040	766,424	1,447,142	240,657	3,267,522	343,242	6,168,121	77.1	1,830,919	1,307,222	897,951	257,767	
Chicago, Rock Island & Gulf	Jan.	625	418,288	52,154	504,507	60,646	40,905	19,606	161,731	20,955	305,961	60.6	198,546	170,648	141,266	62,236	
Chic., St. Paul, Minn. & Omaha	Jan.	1,736	1,273,784	205,226	1,613,946	218,315	299,246	38,371	788,612	83,571	1,439,333	89.2	174,613	75,165	5,668	206,928	
Clinchfield	Jan.	309	492,248	8,788	509,643	65,188	122,984	20,287	110,665	18,776	338,023	66.3	171,620	106,614	185,232	247,636	
Colorado & Southern	Jan.	1,037	654,664	59,475	779,767	76,660	159,863	14,877	288,397	41,795	583,582	74.8	196,185	128,229	108,736	201,738	
Ft. Worth & Denver City	Jan.	696	471,043	79,841	596,765	59,177	106,618	19,291	221,147	37,941	448,248	75.1	148,517	111,186	100,145	162,555	
Wichita Valley	Jan.	270	51,664	2,020	56,112	8,925	3,679	.....	24,248	1,904	38,711	69.0	17,401	10,242	—5,165	—6,656	
Columbus & Greenville	Jan.	167	72,862	8,322	87,133	13,268	14,201	3,903	38,582	11,937	81,891	94.0	5,242	2,814	3,828	28,397	
Conemaugh & Black Lick	Jan.	20	27,246	.....	63,835	7,784	15,420	609	45,581	3,550	72,944	114.3	—9,109	—10,009	—7,009	7,618	
Delaware & Hudson	Jan.	882	2,388,379	200,954	2,754,011	511,984	697,364	55,432	1,066,416	156,350	2,493,934	90.6	260,077	159,258	172,301	401,279	
Delaware, Lackawanna & Western	Jan.	998	3,607,159	773,083	5,021,233	490,553	925,674	133,015	2,318,379	179,368	4,090,648	81.5	930,585	500,445	509,635	630,263	
Denver & Rio Grande Western	Jan.	2,569	1,868,756	134,084	2,132,885	270,846	453,325	55,418	674,195	89,626	1,559,053	73.1	573,832	408,789	446,230	527,364	
Denver & Salt Lake	Jan.	232	202,546	9,457	225,891	27,967	41,819	2,059	38,209	11,149	121,203	53.7	104,688	88,688	101,406	220,748	
Detroit & Mackinac	Jan.	242	44,347	6,153	58,700	11,779	11,907	1,294	26,976	4,182	56,136	95.6	2,564	—6,065	—5,563	—17,937	
Detroit & Toledo Shore Line	Jan.	50	298,730	.....	302,340	21,719	28,922	7,774	81,009	8,078	147,502	48.8	154,838	126,757	67,257	103,278	
Detroit Terminal	Jan.	19	.....	.....	89,222	9,183	9,271	6	46,072	4,176	68,708	77.0	20,514	5,878	6,164	18,563	
Detroit, Toledo & Ironton	Jan.	507	571,455	1,384	587,179	88,694	86,090	12,590	197,958	33,951	418,769	71.3	168,410	120,073	91,250	357,771	
Duluth, Missabe & Northern	Jan.	564	100,452	3,706	125,050	130,479	289,196	4,902	194,552	37,213	655,981	524.6	—530,931	—608,831	—613,181	—632,948	
Duluth, Winnipeg & Pacific	Jan.	178	127,253	5,960	136,855	21,580	37,742	4,467	65,988	7,646	138,621	101.3	—1,766	—8,609	608	17,167	
Elgin, Joliet & Eastern	Jan.	447	1,323,967	4	1,446,867	171,644	329,936	13,869	598,216	55,195	1,168,731	80.8	278,136	161,757	67,124	159,402	
Erie Railroad	Jan.	2,046	5,529,500	682,886	6,737,742	645,675	1,553,001	162,207	2,766,566	291,803	5,452,693	80.9	1,285,049	961,485	904,583	750,317	
Chicago & Erie	Jan.	269	865,727	39,742	957,013	94,876	120,855	28,178	299,062	42,351	583,545	61.0	373,468	317,444	46,178	130,050	

Revenues and Expenses of Railways

MONTH OF JANUARY OF CALENDAR YEAR 1931—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equip. ment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1930.
New Jersey & New York	Jan.	45	$19,768	$84,457	$107,695	$9,050	$23,759	$1,341	$61,179	$3,425	$98,754	91.7	$8,941	$4,482	—$25,721	$39,263
N. Y., Susquehanna & Western	Jan.	131	349,109	34,547	418,664	26,858	54,347	4,817	174,731	12,828	273,518	65.3	145,146	112,093	74,840	38,926
Florida East Coast	Jan.	864	588,457	380,901	1,130,266	140,317	173,584	38,553	328,375	48,960	755,179	66.8	375,087	258,390	191,064	325,941
Fort Smith & Western	Jan.	249	77,896	4,221	91,135	15,329	15,106	4,866	36,299	6,024	76,339	83.8	14,796	11,176	3,342	14,036
Galveston Wharf	Jan.	13	.....	.....	133,265	27,268	4,928	3,614	27,124	7,829	83,424	62.6	49,841	26,841	26,919	26,794
Georgia R. R.	Jan.	328	258,812	31,608	317,682	33,084	66,675	21,218	163,470	23,209	307,914	96.9	9,768	2,155	19,820	54,593
Georgia & Florida	Jan.	463	90,055	3,967	100,603	27,527	22,246	10,760	52,029	8,084	120,783	120.1	—20,180	—27,680	—28,603	—28,866
Grand Trunk Western	Jan.	1,019	1,465,343	124,894	1,724,612	196,385	359,666	65,473	809,643	100,995	1,547,878	89.8	176,734	55,656	—182,173	167,830
*Can. Nat. Lines in New England	Jan.	172	120,000	15,000	149,994	24,141	37,246	5,381	84,622	8,609	162,235	108.16	—12,241	—28,576	—76,408	—81,553
Great Northern	Jan.	8,370	4,618,082	564,522	5,755,160	555,098	1,390,803	220,712	2,387,646	231,366	4,845,780	84.2	909,380	268,891	125,449	3,067
Green Bay & Western	Jan.	234	117,730	1,882	122,844	23,834	25,730	5,446	52,509	3,606	111,112	90.4	11,732	2,732	1,283	26,798
Gulf & Ship Island	Jan.	307	113,012	20,216	149,720	39,289	25,237	4,423	79,630	7,146	156,783	104.7	—7,063	—37,077	—43,861	2,003
Gulf, Mobile & Northern	Jan.	733	379,126	13,955	410,408	54,880	70,519	28,607	145,521	23,318	323,068	78.72	87,340	58,337	32,493	35,324
Illinois Central	Jan.	5,018	6,879,842	1,298,645	8,839,708	971,454	2,058,249	298,703	3,716,792	360,143	7,481,906	84.6	1,357,802	687,251	561,868	1,296,000
Yazoo & Mississippi Valley	Jan.	1,694	1,193,467	145,869	1,439,762	237,768	276,181	42,846	686,583	65,392	1,310,690	91.0	129,072	—36,305	—157,073	199,038
Illinois Central System	Jan.	6,712	8,073,309	1,444,514	10,279,470	1,209,222	2,334,430	341,549	4,403,375	425,535	8,792,596	85.5	1,486,874	650,946	404,795	1,497,702
Illinois Terminal	Jan.	534	391,822	91,515	509,641	51,011	69,627	20,105	185,258	37,912	363,355	71.30	146,286	113,683	87,742	97,309
Kansas City Southern	Jan.	784	969,669	47,924	1,132,514	84,043	196,359	58,266	356,223	74,034	772,324	68.2	360,190	271,183	248,461	233,537
Texarkana & Ft. Smith	Jan.	99	125,713	2,974	144,481	14,468	13,603	7,512	44,195	9,986	91,362	63.2	53,119	44,440	18,109	26,202
Kansas, Oklahoma & Gulf	Jan.	326	201,890	1,193	208,375	18,492	21,879	13,815	54,680	11,088	118,400	56.8	89,975	71,342	52,634	103,824
Lake Superior & Ishpeming	Jan.	160	50,343	904	55,372	20,327	31,952	635	30,763	7,395	91,072	164.5	—35,700	—52,839	—56,798	—50,264
Lake Terminal	Jan.	12	.....	.....	50,561	10,215	10,940	.....	32,149	2,499	55,803	110.4	—5,242	—9,922	—12,003	—17,933
Lehigh & Hudson River	Jan.	96	160,140	1,089	170,450	18,633	28,254	3,207	67,767	9,867	127,728	74.9	42,722	29,436	13,935	3,833
Lehigh & New England	Jan.	216	370,402	936	374,049	34,511	78,275	5,209	134,368	30,498	282,861	75.6	91,188	77,331	89,070	59,850
Lehigh Valley	Jan.	1,361	3,864,455	397,569	4,606,473	311,816	1,045,708	130,660	1,996,483	138,883	3,650,543	79.2	955,930	666,802	564,803	599,766
Louisiana & Arkansas	Jan.	608	381,707	12,694	419,172	71,138	50,299	22,386	138,353	24,096	306,658	73.2	112,514	67,968	51,193	49,754
Louisiana, Arkansas & Texas	Jan.	202	67,888	1,163	71,534	14,370	6,896	3,790	28,940	4,793	58,784	82.2	12,750	8,831	556	—26,452
Louisville & Nashville	Jan.	5,271	6,892,496	852,723	8,337,193	1,187,702	1,946,380	296,406	3,126,121	413,924	7,017,863	84.2	1,319,330	833,581	847,303	1,371,846
Maine Central	Jan.	1,121	1,091,778	190,401	1,393,687	193,210	248,705	15,576	577,037	48,618	1,083,037	77.7	310,650	218,020	152,991	286,740
Midland Valley	Jan.	363	179,143	3,030	190,017	22,278	19,775	5,808	56,515	11,458	115,402	60.7	74,615	61,082	46,448	48,232
Minneapolis & St. Louis	Jan.	1,627	737,764	37,474	828,685	81,612	187,696	38,921	429,430	55,568	790,990	95.5	37,695	—19,348	—46,045	—83,566
Minneapolis, St. Paul & S. S. Marie	Jan.	4,379	1,951,062	190,921	2,340,193	296,922	559,622	76,562	1,091,859	127,150	2,162,555	92.4	177,638	—46,336	—176,981	—205,263
Duluth, South Shore & Atlantic	Jan.	560	197,638	31,727	247,208	26,716	42,936	7,758	117,422	10,021	206,925	83.7	40,283	8,276	14	—7,025
Spokane International	Jan.	163	52,686	4,371	62,027	12,932	6,676	3,471	26,982	5,724	56,364	90.9	5,663	633	—2,999	95
Mississippi Central	Jan.	150	83,668	2,481	88,873	13,180	15,698	9,177	27,697	6,996	72,748	81.9	16,125	10,473	6,771	15,115
Missouri & North Arkansas	Jan.	364	89,216	2,573	98,436	30,799	16,629	9,728	48,472	8,239	113,263	115.1	—14,827	—17,315	—27,794	—5,874
Missouri-Illinois	Jan.	202	107,868	1,127	111,226	12,185	29,382	3,813	38,363	6,586	90,073	81.0	21,153	14,651	3,759	16,087
Missouri-Kansas-Texas Lines	Jan.	3,188	2,261,209	358,066	2,918,252	315,366	485,981	129,858	1,038,131	177,051	2,169,517	74.3	748,735	545,339	355,062	418,334
Missouri Pacific	Jan.	7,450	6,823,300	710,405	8,250,182	822,250	1,374,478	314,763	3,208,144	363,589	6,092,539	73.9	2,157,643	1,719,986	1,411,563	1,446,781
Gulf Coast Lines	Jan.	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....	.....	.....	.....
International-Great Northern	Jan.	1,159	800,291	116,103	1,028,602	155,039	205,024	40,691	474,946	67,420	954,400	92.79	74,202	30,351	—38,061	5,423
San Antonio, Uvalde & Gulf	Jan.	316	108,104	12,267	130,177	31,178	14,094	5,653	25,171	6,311	82,167	63.1	48,010	43,341	15,535	—18,558
Mobile & Ohio	Jan.	1,152	795,023	43,643	898,504	127,081	188,077	53,959	398,706	51.128	814,014	90.6	84,490	61,259	2,644	8,143
Monongahela	Jan.	177	418,267	3,728	425,118	60,000	45,000	1,457	112,999	10,892	229,920	54.1	195,198	178,781	93,968	125,355
Monongahela Connecting	Jan.	6	.....	.....	92,837	12,101	26,093	300	54,669	3,161	96,324	103.8	—3,487	—9,404	—9,954	19,032
Montour	Jan.	57	194,710	.....	195,841	12,041	46,480	1,504	56,491	7,615	124,131	63.4	71,710	69,641	80,772	64,692
Nashville, Chatt. & St. Louis	Jan.	1,203	1,026,451	160,463	1,344,910	213,952	292,817	74,139	539,281	81,367	1,213,465	90.2	131,445	66,414	42,282	155,783
Nevada Northern	Jan.	165	33,576	2,400	40,676	11,850	5,013	1,075	13,919	4,653	36,457	89.6	4,219	—2,855	—1,241	28,395
Newburgh & South Shore	Jan.	6	.....	.....	80,298	20,932	26,390	.....	47,922	7,162	102,406	127.5	—22,108	—35,123	—34,488	—33,047
New Orleans Great Northern	Jan.	264	170,803	9,448	185,946	19,032	33,257	15,223	59,739	11,430	138,681	74.6	47,265	37,108	13,353	14,261
New Orleans Terminal	Jan.	20	1,768	.....	137,030	14,866	13,143	.....	54,097	1,487	83,593	61.0	53,437	41,479	19,533	4,203
New York Central	Jan.	11,421	21,180,936	8,655,230	33,820,786	4,005,666	7,818,920	737,137	13,270,511	1,353,293	27,794,360	82.1	6,026,426	3,118,380	1,872,100	5,609,582
Indiana Harbor Belt	Jan.	118	.....	.....	805,065	70,000	95,000	4,675	367,114	31,819	593,214	73.7	211,851	168,176	117,367	159,762
Pittsburgh & Lake Erie	Jan.	232	1,477,989	133,547	1,658,925	146,432	476,339	34,252	666,635	80,249	1,407,258	84.8	251,667	117,857	321,152	436,785
New York, Chicago & St. Louis	Jan.	1,698	2,993,272	134,686	3,231,265	320,151	631,716	119,074	1,301,065	135,535	2,516,414	77.9	714,851	488,111	181,234	488,339
N. Y., New Haven & Hartford	Jan.	2,122	4,340,211	3,141,417	8,437,864	855,813	1,404,893	85,976	3,056,801	315,420	5,901,819	69.9	2,536,045	1,984,067	1,383,339	1,882,368
New York Connecting	Jan.	20	179,436	.....	194,753	15,581	8,062	.....	34,643	1,038	59,324	30.5	135,429	98,479	70,051	93,439
New York, Ontario & Western	Jan.	568	655,911	31,908	818,743	69,848	149,245	14,249	379,417	28,798	648,295	79.2	170,448	127,970	79,567	21,867

* Formerly the Atlantic & St. Lawrence.

* Formerly the Atlantic & St. Lawrence.

Revenues and Expenses of Railways

MONTH OF JANUARY OF CALENDAR YEAR 1931—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equip. ment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1930.
Norfolk & Western	Jan.	2,235	$6,186,690	$273,952	$6,696,247	$788,266	$1,376,119	$119,364	$1,868,074	$260,759	$4,430,277	66.2	$2,265,970	$1,515,263	$1,678,683	$2,853,056
Norfolk Southern	Jan.	932	402,151	14,844	444,760	67,263	77,744	25,628	210,079	25,314	405,708	91.2	39,052	—9,453	—18,796	20,653
Northern Pacific	Jan.	6,789	3,850,547	487,370	4,844,770	489,455	1,246,922	201,451	2,127,203	272,424	4,421,994	91.3	422,776	—232,087	83,891	—20,718
Northwestern Pacific	Jan.	441	151,449	96,296	283,852	92,112	74,115	5,237	175,917	18,402	365,462	128.8	—81,610	—117,822	—123,928	—108,007
Oklahoma City-Ada-Atoka	Jan.	132	52,972	1,859	57,823	14,127	3,054	1,376	17,880	3,064	39,424	68.2	18,399	13,512	2,323	—5,304
Pennsylvania Railroad	Jan.	10,891	26,410,300	8,507,518	38,695,611	5,053,991	8,471,152	773,204	15,904,980	1,576,027	32,366,789	83.6	6,328,822	4,187,636	3,027,396	6,363,583
Long Island	Jan.	404	770,188	1,831,642	2,763,421	326,301	460,232	17,448	1,221,644	63,160	2,088,754	75.6	674,667	550,127	382,141	314,950
Peoria & Pekin Union	Jan.	17	8,375	558	11,433	8,935	10,262	5,619	52,760	7,752	85,328	71.4	34,105	16,605	37,793	30,113
Pere Marquette	Jan.	2,265	1,945,373	151,197	2,228,728	405,052	479,055	70,111	982,284	106,822	2,051,841	92.1	176,887	8,902	—126,269	—177,056
Pittsburgh & Shawmut	Jan.	102	73,628	1,804	76,715	12,286	21,937	1,679	23,964	4,400	64,266	83.8	12,449	11,350	11,015	36,474
Pittsburgh & West Virginia	Jan.	92	222,608	2,447	253,351	33,578	65,616	17,505	53,295	23,617	203,247	80.2	50,104	32,345	62,279	134,229
Pittsburgh, Shawmut & Northern	Jan.	198	101,311	458	104,416	13,545	20,983	1,320	38,455	7,205	81,508	78.0	22,908	20,117	17,341	30,785
Quincy, Omaha & Kansas City	Jan.	249	27,032	3,020	34,902	11,739	9,592	1,175	21,792	2,411	46,591	133.5	—11,689	—16,444	—19,073	—10,266
Reading	Jan.	1,454	5,783,887	456,249	6,654,942	843,558	1,806,933	87,092	2,742,117	240,216	5,742,211	86.3	912,731	699,283	684,779	871,265
Atlantic City	Jan.	163	99,532	48,149	157,421	51,884	23,125	3,222	152,816	4,466	236,027	149.9	—78,606	—120,206	—137,708	—126,865
Richmond, Fredericksburg & Potomac	Jan.	117	410,627	294,508	842,230	63,045	146,758	9,107	311,285	37,165	589,342	70.0	252,888	203,888	140,445	164,843
Rutland	Jan.	413	199,191	71,835	359,467	77,490	79,154	10,024	174,220	17,684	360,437	100.3	—970	—21,794	—17,566	15,824
St. Louis San Francisco	Jan.	5,264	3,694,624	532,406	4,649,695	521,535	904,320	120,370	1,794,755	212,078	3,581,931	77.0	1,067,764	729,309	665,519	1,172,263
Ft. Worth & Rio Grande	Jan.	233	41,238	2,963	51,080	13,819	12,609	2,993	35,148	4,134	68,578	134.3	—17,498	—22,807	—30,959	—10,071
St. Louis, San Francisco & Texas	Jan.	262	109,266	7,018	121,193	26,209	18,178	6,050	52,776	8,240	111,452	92.0	9,741	5,520	—23,990	—16,859
St. Louis Southwestern Lines	Jan.	1,913	1,253,117	45,653	1,395,883	221,133	255,977	104,283	576,654	85,756	1,238,895	88.8	156,988	66,098	—57,061	—4
San Diego & Arizona	Jan.	155	55,323	21,260	78,196	13,219	15,130	3,708	24,675	7,226	65,159	83.3	13,037	7,454	9,485	25,889
Seaboard Air Line	Jan.	4,481	2,993,286	654,247	4,013,109	599,072	726,582	193,997	1,520,162	172,528	3,278,017	81.7	735,092	393,043	239,101	807,517
Southern Ry.	Jan.	6,730	6,537,261	1,255,332	8,447,501	1,336,972	1,841,636	238,778	3,352,716	347,050	7,185,421	85.1	1,262,080	612,345	420,238	1,325,933
Alabama Great Southern	Jan.	315	416,376	75,393	531,555	108,129	136,042	18,449	198,613	22,894	489,250	92.0	42,305	—2,070	10,395	62,128
Cinn., New Orleans & Tex. Pac.	Jan.	338	1,118,059	179,462	1,368,738	222,449	339,438	33,789	477,611	54,659	1,135,366	82.9	233,372	149,620	158,110	301,967
Georgia Southern & Florida	Jan.	397	179,993	78,288	280,852	56,068	62,653	1,778	106,793	2,698	237,014	84.4	43,838	26,327	28,573	45,295
New Orleans & Northeastern	Jan.	204	214,412	36,892	268,535	54,825	66,172	11,178	116,091	13,847	265,047	98.7	3,488	—37,121	—57,873	2,535
Northern Alabama	Jan.	110	59,325	2,558	63,916	20,661	2,921	1,845	26,210	2,820	54,457	85.2	9,459	3,928	—5,284	5,255
Southern Pacific	Jan.	9,128	8,642,904	2,650,155	12,419,746	1,793,175	2,656,749	335,762	4,670,824	649,901	10,362,351	83.4	2,057,395	961,830	669,935	1,518,603
So. Pacific Steamship Lines	Jan.	...	419,082	27,901	482,849	16,681	149,462	21,579	397,735	32,490	617,947	128.0	—135,098	—136,417	—136,549	—55,942
Texas & New Orleans	Jan.	4,700	3,067,646	589,357	4,083,818	698,006	898,071	164,099	1,524,548	241,243	3,544,896	86.8	538,922	249,336	5,376	230,917
Spokane, Portland & Seattle	Jan.	555	386,436	49,929	479,023	52,550	86,544	11,375	177,365	23,422	353,386	73.8	125,637	39,603	29,354	45,732
Tennessee Central	Jan.	295	216,654	9,755	237,493	60,471	40,230	9,015	90,100	14,496	214,267	90.2	23,226	17,709	1,788	17,802
Term. R. R. Assn. of St. Louis	Jan.	55	.....	.....	708,541	103,224	70,854	3,205	367,305	23,084	570,694	80.5	137,847	42,352	125,956	206,991
Texas & Pacific	Jan.	1,955	2,018,918	287,904	2,513,383	313,269	464,599	86,133	868,983	120,200	1,867,615	74.3	645,768	530,365	321,702	182,526
Texas-Mexican	Jan.	162	43,113	1,775	59,594	17,301	15,063	3,334	42,580	7,827	86,473	145.1	—26,879	—31,923	—38,293	—17,799
Toledo, Peoria & Western	Jan.	239	133,460	65	136,406	17,396	13,862	15,097	49,844	10,082	106,281	77.9	30,125	24,770	18,712	—10,295
Toledo Terminal	Jan.	28	.....	.....	93,930	5,683	14,806	574	40,420	4,895	66,378	70.1	27,552	13,385	39,892	32,794
Ulster & Delaware	Jan.	128	20,677	1,918	56,937	12,028	10,214	1,194	34,400	3,938	61,774	108.5	—4,837	—8,637	—9,804	—15,494
Union R. R. of Penna	Jan.	45	.....	.....	429,840	71,316	180,139	163	255,374	14,693	521,685	121.4	—91,845	—101,645	—47,923	83,949
Union Pacific	Jan.	3,765	5,835,164	763,891	7,212,191	556,374	1,709,934	150,622	2,281,459	334,079	5,155,831	71.5	2,056,360	1,415,343	1,206,204	1,298,244
Oregon Short Line	Jan.	2,531	2,020,794	206,663	2,422,238	241,054	405,721	51,547	812,282	125,434	1,698,263	70.1	723,975	435,301	340,991	486,047
Oregon-Wash. R. R. & Nav. Co.	Jan.	2,337	1,309,561	151,578	1,638,324	253,272	256,221	75,134	731,160	124,755	1,463,021	89.3	175,303	—8,083	—114,026	—59,742
Los Angeles & Salt Lake	Jan.	1,227	1,295,972	235,985	1,675,352	323,827	306,719	68,331	573,430	82,775	1,405,888	83.9	269,464	121,069	—5,456	205,326
St. Joseph & Grand Island	Jan.	258	247,098	4,484	260,291	29,367	35,706	3,765	89,021	18,181	176,456	67.8	83,835	66,403	38,583	58,259
Utah	Jan.	111	200,754	36	203,346	18,866	43,021	360	45,181	5,871	112,804	55.5	90,542	70,955	54,971	71,174
Virginian	Jan.	561	1,366,956	17,327	1,478,223	128,882	271,957	13,113	308,483	33,310	758,098	51.3	720,125	545,125	607,740	898,025
Wabash	Jan.	2,523	3,416,604	384,041	4,121,178	269,548	678,434	180,064	1,924,308	224,391	3,299,351	80.1	821,827	628,295	259,393	429,905
Ann Arbor	Jan.	293	311,138	7,833	328,599	25,958	62,981	13,615	166,664	17,508	286,748	87.3	41,851	18,491	—8,471	16,324
Western Maryland	Jan.	896	1,304,067	11,205	1,365,318	174,456	202,666	44,343	369,507	40,506	832,432	61.0	532,886	457,886	457,500	462,711
Western Pacific	Jan.	1,051	843,989	43,470	944,389	89,825	220,557	69,335	465,289	53,331	904,137	95.7	40,252	—54,073	—27,803	—31,503
Wheeling & Lake Erie	Jan.	511	853,632	14,497	922,849	81,049	261,414	34,540	335,168	41,835	755,232	81.8	167,617	64,310	53,151	229,793
Wichita Falls & Southern	Jan.	203	47,143	146	49,162	11,156	8,841	2,883	20,862	4,899	48,042	97.72	1,120	—4,007	—8,460	177

News

(Continued from page 558)

plemental report covers the remaining issues. The examiner recommends a finding that the package basis of stating rates is unjust and unfair and that the rates be restated on a weight basis.

Rates on Automobiles Reduced

The Eastern roads began filing tariffs with the Interstate Commerce Commission on March 10 making reductions effective April 10 on commodity rates on automobiles from factory and assembling points, to meet truck competition, in accordance with an agreement recently announced by J. S. Marvin, traffic manager, National Automobile Chamber of Commerce, who said that after conferences with the industry, Eastern roads had agreed to reduce the general basis for automobile rates from 110 per cent of first class to first class and to publish special commodity rates for distances up to 500 miles as alternates, to apply when lower than class rates.

Southwest Shippers' Board

The reports of the 29 commodity committees at the Southwest Shippers' Advisory Board meeting in Houston, Tex., on March 5 indicate that carloadings will show a decrease of 2.7 per cent during the second quarter of the year as compared with the same period last year. The increases anticipated include citrus fruit, 200 per cent, fresh vegetables, 5 per cent, cement, 10 per cent, and salt, 3 per cent. The decreases expected are in grain, 20 per cent, flour, 15 per cent, hay and straw, 20 per cent, cotton, 15 per cent, cottonseed, 15 per cent, livestock, 10 per cent, coal and coke, 25 per cent, sugar, syrup and molasses, 2 per cent, agricultural implements, 25 per cent, fertilizer, 25 per cent, and canned goods, 10 per cent.

J. W. Evans, chairman of the Houston Port Commission, was the principal speaker at the meeting. H. C. Eargle, traffic manager of the Beaumont Chamber of Commerce, presented a report covering conditions in Texas as did W. S. Cornell, traffic manager of the Shreveport Chamber of Commerce on Louisiana.

Report of Director General of Railroads

President Hoover, just before the adjournment of Congress, transmitted to it the annual report of A. W. Mellon as director general of railroads, recounting the progress made during the past year in the settlement of matters arising from the period of federal control of the railroads.

During the calendar year 1930 there were 499 suits and claims, involving $1,855,101, finally closed, according to the report. Of these, 136 were suits and proceedings against the director general for $737,633 (exclusive of those before the Interstate Commerce Commission), disposed of at a cost of $83,686, or approximately 11 per cent. There were 12 proceedings before the Interstate Commerce Commission for reparation, amounting to $295,467, disposed of at a cost of $83,115, or approximately 27½ per cent; 136 suits and claims on behalf of the director general, for $421,544, from which there was collected $65,899, or approximately 11 per cent; and 215 judgments, involving $400,456, of little or no value on account of the financial condition of the debtors, disposed of, resulting in the collection of $4,335. From all sources, there was collected during the year $4,533,880, consisting of cash collections of $109,212, with credits direct to the director general's appropriation of $4,424,667.

The total operating expenses of the administration for the year amounted to $58,953, representing a reduction from that item for the year 1929 of $21,657, or 27 per cent. The number of employees on the pay roll remained practically the same as for preceding year: 14.

On December 31, there remained unadjusted 380 suits, claims, and proceedings against the director general, involving $1,513,318, and 160 in which he claims a total of $1,014,723. There were also 466 unsatisfied judgments in favor of the director general amounting to $306,834.

I. C. C. Construction Order Sustained

The Supreme Court of the United States on March 9 affirmed the decision of the district court for the southern district of Virginia which had denied the application of the Chesapeake & Ohio for an order to set aside the order of the Interstate Commerce Commission authorizing the Norfolk & Western to build a line from Gilbert to Wharncliffe, W. Va., 10½ miles, while at the same time denying an application of the Chesapeake & Ohio for a certificate to build another line through the Guyandot Valley. After discussing the provisions of the interstate commerce act under which the commission issues certificates for construction the court said in part:

"There is no specification of the considerations by which the commission is to be governed in determining whether the public convenience and necessity require the proposed construction. Under the act it was the duty of the commission to find the facts and, in the exercise of a reasonable judgment, to determine that question. Undoubtedly the purpose of these provisions is to enable the commission, in the interest of the public, to prevent improvident and unnecessary expenditures for the construction and operation of lines not needed to insure adequate service. In the absence of a plain declaration to that effect, it would be unreasonable to hold that Congress did not intend to empower the commission to authorize construction of new lines to provide for shippers such competing service as it should find to be convenient or necessary in the public interest. Indeed, section 5 (4) of the act, authorizing the commission to adopt a plan for the consolidation of railway properties into a limited number of systems, clearly discloses a policy on the part of the Congress to preserve competition among carriers. And the commission has recognized the advantages of competitive service to shippers especially in respect of a diversified car supply for the shipment of coal and lumber; it suggests the possibility of failure of operation from various causes, that under some circumstances competition operates to stimulate better service and that reasonable competition may be in the public interest. The facts stated in the report are sustained by the evidence and, under the act, they are plainly sufficient to support the order."

Railway Earnings for January

The net railway operating income of the Class I railroads in January amounted to $33,849,116, which for that month was at the annual rate of 2.28 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In January, 1930, the total was $55,773,152, or 3.81 per cent.

The statement for January shows:

CLASS I RAILROADS—
UNITED STATES, JANUARY

	1931	1930
Total operating revenues	$365,899,754	$451,458,786
Total operating expenses	294,081,947	356,664,032
Taxes	27,289,096	29,426,790
Net railway operating income	33,849,116	55,773,152
Operating ratio — per cent	80.37	79.00
Percent of return on investment	2.28	3.81

Fifty-two Class I railroads operated at a loss in January, of which 19 were in the Eastern district, 8 in the Southern and 25 in the Western.

In the Eastern district in January the total net railway operating income was $19,165,918, compared with $33,501,142 last year. Operating revenues, $185,309,574, a decrease of 19.6 per cent; operating expenses $148,120,190, a decrease of 17.1 per cent.

In the Southern district the net was $3,375,077, or at the rate of 1.33 per cent, compared with $7,581,149; operating revenues, $47,637,528, a decrease of 20.1 per cent; operating expenses $39,666,399, a decrease of 16.3 per cent.

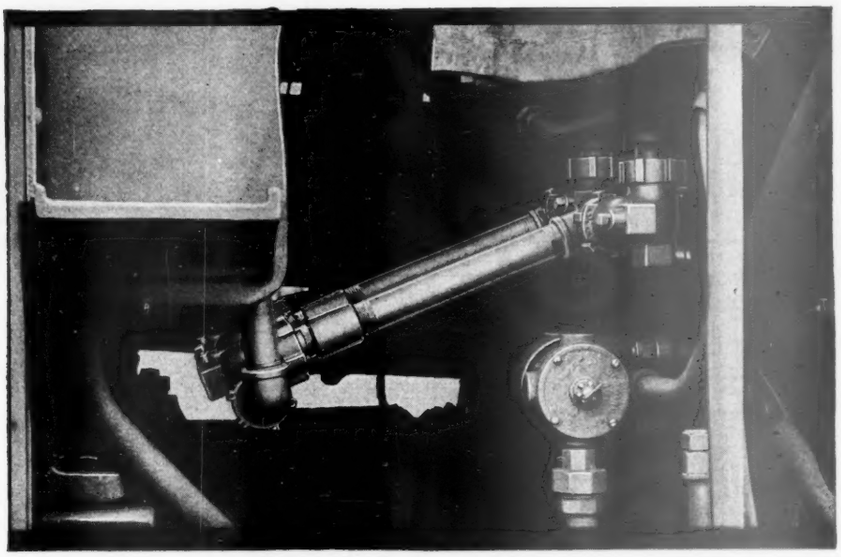
In the Western district, the total net was $11,308,121 compared with $14,690,861; operating revenues $132,952,652, a decrease of 17.6 per cent; operating expenses $106,295,358, a decrease of 18.6 per cent.

Payment of Freight Bills by Check

The Chicago, Milwaukee, St. Paul & Pacific sued a lumber company for freight charges on a cargo of coal shipped to it. The defense was payment. The railroad, as customary, had accepted the defendant's check on a local bank, delayed presenting it, and meanwhile the bank had failed. The defendant contended it was relieved from liability by the carrier's unjustifiable delay in presenting the check. The trial court ruled that the Interstate Commerce Act requires a carrier's charges to be paid strictly in currency, and that since the check had not been paid, the defendant was liable, regardless of any negligence of the railroad. Judgment for the carrier was affirmed by the Circuit Court of Appeals, Eighth Circuit, 36 F (2d) 180. This judgment is reversed by the Supreme Court of the United States for the following reason:

"It has long been settled that payment

Continued on Second Left Hand Page



Save Gaskets...Lower Maintenance

...with the Franklin Sleeve Joint

HERE is an improved flexible connection free from limitations for conveying air, steam and oil between engine and tender.

■ It offers two outstanding features—flat gaskets and wide spread bearings supporting the sleeve—which assure longer life and correspondingly lower maintenance costs.

■ Due to the wide spacing of the sleeve bearings, the sleeve and gasket always maintain true alignment. There is no tendency to "cock". Bearing wear is greatly reduced . . . gasket life is prolonged.

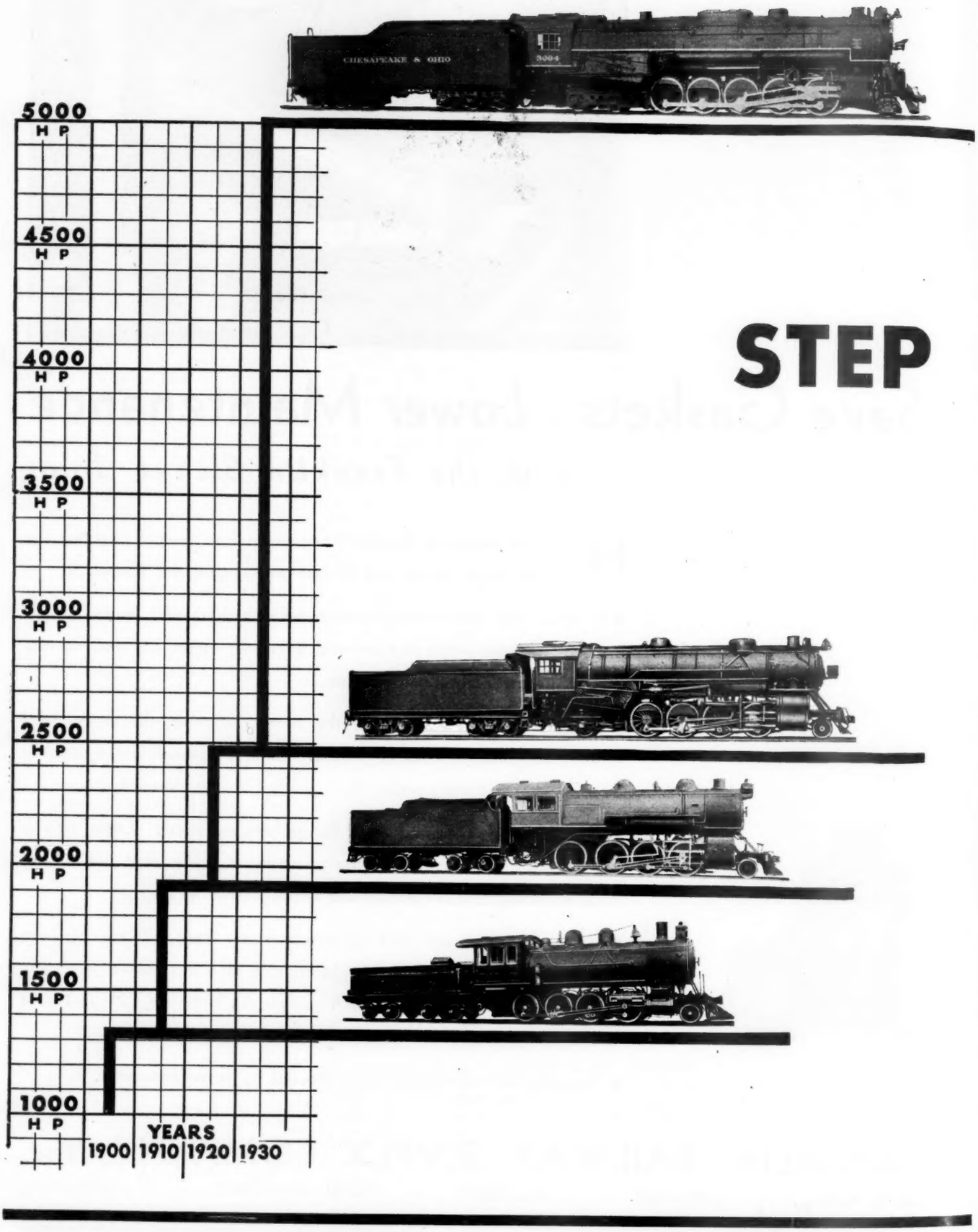
■ Uniform wear is assured when flat gaskets are used. Little area is exposed to line pressure and foreign matter is easily kept out of the joint, reducing abrasive action and undue gasket wear.

■ In any flexible connection the gasket is the important maintenance item. By using Franklin Sleeve Joints with their flat gaskets not only is maintenance reduced, but when gaskets are renewed, the first cost of the flat type is far lower.

■ Franklin Sleeve Joints are not affected by curve distortion.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO MONTREAL


CHESAPEAKE & OHIO
3004
5000 H P
4500 H P
4000 H P
3500 H P
3000 H P
2500 H P
2000 H P
1500 H P
1000 H P
YEARS
1900 1910 1920 1930

STEP

HORSE-POWER

UP

■ Until about 10 years ago, increases in locomotive horse-power were obtained by the time-honored method of increasing bulk and weight. Now it is done by intensifying power output and getting more power per pound of weight.

■ By combining modern power-producing elements into a harmonious design, locomotive horse-power has been stepped-up so that it is now possible to secure over 1,000 H. P. output per driving axle.

■ Stepping up the power output of the locomotive in turn steps up the output of the whole transportation plant —resulting in increased net revenue.

LIMA LOCOMOTIVE WORKS

INCORPORATED

LIMA - - - - - - OHIO

of a carrier's charges must be made in money; and that the payment must be cash as distinguished from credit. The purpose of the requirement is solely to prevent rebates or unjust discrimination and to ensure observance of the tariff rates. Compare C. & N. W. v. Lindell, 281, U. S. 14, 16. The Interstate Commerce Act does not in terms prescribe that the charges shall be paid in money; that is, in coin or currency. There is no reason for denying to the parties the convenience and safety incident to making payment, in accordance with the prevailing usage of business, by means of a check payable on demand drawn on a going bank in which the drawer has an ample deposit."

Whether the defendant in this case is liable depends, the court said, not upon any provision of the Interstate Commerce Act, but upon the rules of law generally applicable to payment by check, which question the court did not consider. Fullerton Lumber Co. v. Chicago, Milwaukee, St. Paul & Pacific. Decided February 24, 1931. Opinion by Mr. Justice Brandeis.

"Pennsylvania News" Collecting Relics for System Museum

Looking forward to the time when a Pennsylvania Railroad museum will be established for the entire system, possibly at the general headquarters in Philadelphia, Pa., the "Pennsylvania News" has launched a campaign to collect all available material relating to the history of the road. Although quarters are not yet ready for housing this material and definite plans for the museum are not completed, the campaign has been begun in order to have as large a nucleus of relics as possible ready by the time the museum is finally opened. An accurate account is being kept of each contribution so that the donor will receive full credit for it when placed on display.

The first contributions to arrive from employees were a few old-time annual passes, a half-dozen or more metal baggage checks, a link and pin used in coupling cars, old receipt and other record books, and photographs of early modes of travel and of the Horseshoe Curve when it had but two tracks. From Elmira, N. Y., came the desk, chairs and clock used by the late E. H. Harriman when he began his railroad career on what is now the Elmira division of the Pennsylvania. The old "Pioneer" locomotive, built in Boston, Mass., in 1851 for the Cumberland Valley (now part of the Pennsylvania), and used in regular service on that railroad until 1880, was located in the Meadows shops at Jersey City, N. J., and will be available for the exhibition. From Harrisburg, Pa., came pieces of 46-lb. steel rail, manufactured in England in 1871, and stone blocks on which the first rails were laid when the Philadelphia & Columbia Railroad was built in 1832 have also been offered. Cleveland sent a timetable especially issued to cover the funeral train of President Garfield from Pittsburgh to Cleveland on September 24, 1881. Interesting and valuable old records, timetables and rule books have been received from Chicago, Decatur, Ill., Indianapolis, Ind., Terre Haute, Alliance, Ohio, New Castle, Pa., Oil City and Kittanning, while arrangements are being made to obtain the old Lozier automobile used by the late President Samuel Rea and party on the first trip through the Hudson River tunnel immediately after the borings had been completed, in June, 1909, before tracks or signals had been placed in position.

Southern Pacific Unveils Monument to Judah

The Southern Pacific, on February 25, unveiled a monument in honor of Theodore D. Judah, who built the first railroad in the far west in 1855-1856. Public officials, school children, railroad officers, and employees of the Southern Pacific participated in the ceremony at Sacramento, while Miss Janice Judah, great great grandniece of the engineer, unveiled the monument. Carl I. Wheat, a San Francisco attorney and Judah's official biographer; Mayor C. H. S. Bidwell of Sacramento; F. L. Burckhalter, general manager, and W. H. Kirkbride, engineer of maintenance of the Southern Pacific, were among the speakers.

The granite monument is fashioned from boulders taken from the Sierra Nevada mountains, and stands in the city park, facing the Sacramento passenger station of the Southern Pacific. Surveys for the Sacramento Valley Company's line were completed by Judah in 1854. Grading began on February 12, 1855, and the clipper ship "Winged Racer" arrived from around the Horn in June of that year with rails and rolling equipment, and, on August 9, the first rail was laid. Washington's birthday of 1856 saw regular service established between Sacramento and Folsom, a distance of 23 miles. It was eight years before any other railroad was operated in California.

With the "valley road" completed, Judah turned his attention to the "transcontinental," his main ambition, and, aided by Daniel Strong, a mountaineer, found a pass suitable for a railroad over the Sierra. Then he won the support of Stanford, Huntington, Hopkins, Crocker, a support which resulted in the founding of the Central Pacific company in June, 1861, and the completion of the transcontinental railroad on May 10, 1869.

Granite Statue With Likeness of Judah Carved on Its Face

A few months after Judah saw ground broken for the project in Sacramento, he left for New York and Washington to look after financial and legislative matters. He was stricken with Panama fever while crossing the isthmus and died in New York on November 2, 1863, when only 37 years old. The Sacramento Valley company's properties were purchased by the Central Pacific, a parent organization of the present Southern Pacific, in 1865, and, during the same year, the railroad was extended to Shingle Springs, 26 miles. The terminus remained at this point until the railroad was built 12 miles further to Placerville during 1888.

R.B.A. Addresses N.A.C.C.

President Alba B. Johnson of the Railway Business Association has addressed a letter, with an accompanying memorandum, to President Alvan Macauley of the National Automobile Chamber of Commerce raising the question as to whether the interests of the two associations are not identical. Mr. Johnson points out the necessity of prosperity to increased automobile production and the unlikelihood of any such prosperity unless the railroads prosper.

"As you must be aware," his letter reads, "the preponderant part of your market—the pleasure motorists—will be adversely affected in no direction or degree by any measures suggested or pending in the state legislatures, these car-owners on the contrary having reason to extend a spontaneous welcome to whatever promises less discomfort and danger to them on the highway, and the truck and bus manufacturers and operators themselves may well bear in mind that their long-range interest is in equalization, not in defeating it. They have to pay for anything else worth having and apparently some concession in the matter of their competition with railways is the price of their long-range welfare.

"With our magnificent distances," his memorandum says, "as against the short hauls between specialty centres in Europe, few phases of our struggle for economy in production are more vital or more difficult than transport cost within the country. We are handicapped without by competing labor cost everywhere below our own and in Russia almost nothing. We are handicapped within by taxation on industry mounting as the politicians aspire to outdo the moribund Caesars in largess and waste of public money. Among the essentials to offset these disadvantages is better and more economical transport. That whole job is laid upon the railway and the automobile in whatever quotas and directions experience may evolve. Indefinitely the railroad must carry the long end.

"Which would do more to enlarge the sale of trucks—prevention of legislation affecting highway vehicles for hire, or

Continued on Next Left Hand Page

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

"There's nothing new under the sun"

- **The difficulties with locomotive combustion that arise to plague the mechanical officers are old stories to the American Arch service man.**
- **They may assume different disguises, but they can't fool the experienced eyes of men who have spent their lives diagnosing locomotive troubles.**
- **By reason of their broad contact with locomotive combustion, American Arch Company service men possess a wealth of experience that means much to the railroads they serve.**
- **Such advice and counsel on combustion improves Arch Brick service and dependability of operation and results in ultimate economy.**

Harbison-Walker Refractories Co.
Refractory Specialists

American Arch Co.
INCORPORATED
Locomotive Combustion ... Specialists ...

restoration of general prosperity, increasing the freight volume to be trucked and the industrial earnings to buy trucks with?

"Not only are the railways a large actual market for motor coaches and a large potential market for trucks—to say nothing of the amphibians now in the incubator—but they are pay customers. It is reported that some truck and coach builders laboring under the strain of successive repossessions on each installment-sold car are showing signs of fatigue and penitence. Whenever you sell a truck or coach to a railroad it is a contract, not a companionate marriage."

Railways Handicapped by Taxes and Regulation

In addition to being deprived of traffic sorely needed, as a result of increasing bus and motor truck competition, the railroads are also handicapped by a heavy tax burden and government regulation to a degree that is often oppressing, J. B. Wood, treasurer of the Central Vermont, said in a recent address before the Northfield (Vt.) Chamber of Commerce.

The railways, Mr. Wood said, pay three hundred and seventy-five millions annually in taxes, yet the government departments and bureaus clamor for more. The whole railroad problem, he said, is one of concern, not only to the railways but to the public as well, because anything which tends to cripple the efficiency of the present railway system can not fail to adversely affect national progress and prosperity.

The railroads, he continued, do not advocate the elimination of motor vehicles and waterway competition, but they do ask for governmental and state regulation of competitors to such an extent that "fair competition will be assured all." "At present," he said, "the railroads are regulated and supervised by 48 state legislatures, their public service commissions, the United States Congress and national boards of mediation and arbitration, including the Interstate Commerce Commission. In all, some 100 bodies are authorized to supervise their operation and control their rates."

Motor vehicles, on the other hand, Mr. Wood pointed out, are operated over the public highways built with the money of taxpayers, which includes the rail carriers, and "are not regulated as are the railroads. There is no interstate regulation of the rates of motor coach, truck and airplane lines. They can charge whatever the traffic will bear, and, in the absence of interstate regulations, can discriminate at will among their patrons.

"There is, however," he continued, "some regulation of intrastate motor vehicle lines, but it is limited compared to that imposed on railroads. Restriction of weight limits of trucks and buses, where it exists, is felt to be inadequate to protect the highway and insure the safety of the public. The daily and weekly service of the drivers of those vehicles is seldom regulated for the safety of their freight, passengers, the public or themselves, while locomotive engineers have their working hours limited by law."

Twenty Million "Dumb-Bells"?

(Continued from page 557)

subsidize motor coaches and motor trucks.

A member of some state legislature introduces a bill providing for a tax scale on heavy trucks increasing with the weight. It is not a revenue measure. What, then, is the object? Two-fold. Above certain weights the tax is intended to be prohibitive, to limit weight. Among the motives for such a limit is to check the upward tendency of highway construction and maintenance cost, by excluding weights previously tolerated, thus making a given quality of road last longer. The graduated weight tax, however, does more than merely head off the soaring total cost of constructing and maintaining roadway. Having eliminated, by prohibitive operating cost, weights above some economic limit, the graduated weight tax is intended to make the surviving heavy vehicles pay a larger and the light vehicles a smaller proportion of the future total taxes on all motor cars. If in one of the 44 state legislatures open for business this year any pending bill would or could increase the cost of operating light motor cars I have escaped collision with it.

For convenience I have used the word "tax" in connection with highway vehicles. The expression is misleading. Just what is meant by "taxes?" If I walk into a store and buy a necktie I may ask the salesman "What's the tax?" and he may reply "A dollar and a half." But my calling the price of the tie a tax does not make it a tax. No more is it a tax that the railroads pay when they provide a railroad to run the trains on or a tax that the automobile owner pays when he reimburses government for the road it builds and maintains for him. The dollar and a half I disgorge for the necktie is the price of something which I want badly enough to buy and pay for. Railway construction and maintenance is the same thing. No different are the sums which are commonly but inaccurately called automobile taxes. They are not a tax. They are a price.

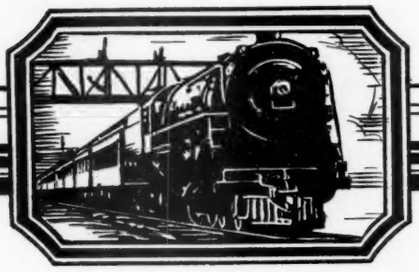
It is a joke to call automobile reimbusements for highway costs taxes. But the taxes a railroad pays are no joke. These sums are taken *after the railroad has paid for the road and its upkeep.* A motor coach circular says that in 1929 railroads paid 6 per cent of operating receipts in taxes and buses 7.2 per cent. In maintenance of way and taxes combined the railroads paid 20 per cent of their receipts; and even this is not comparable with the motor reimbusements, because the railroad figures for capital charges on construction are not given separately for road and for rolling stock. Accepting this motor coach circular as authentic as to bus statistics the nearest we can get to it is that buses paid 7.2 per cent of receipts and railroads 20 per cent plus capital charges, whatever these were, on roadway.

Motorists are concerned in other directions than in that of taxation. They are deeply interested in safety. In the increasingly rare intervals between passages about taxes, the "dumb-bells" are invited to contemplate the evils of over-regulation. Automobiles, they hear, are everywhere sufficiently regulated now. If it is desirable to equalize conditions of competition between rail and highway, this should be achieved not by putting regulation on motor vehicles but by taking it off the railways. Let me consider one concrete example. A legislator introduces a bill requiring a truck or bus operator to pass an optical and general examination before being licensed; giving him arbitration of wages under virtual compulsion upon the employer; limiting hours of service; prescribing two men on a vehicle, each competent to operate it, and prohibiting the relief chauffeur to take his rest on a shelf under the driver's seat. There is the bill. Now are we "dumb-bells" to understand that the appropriate procedure for equalizing competitive conditions in respect of employees is to take regulation off the railroads and leave it off the trucks and buses? To ask the question is to answer it. It will take more "dumb-bells" than were enumerated at the last census to accomplish a single step backward in the regulation of railroads for the safety of employees and of the public. Does anybody seriously contend that there is regulation enough of trucks and coaches in any jurisdiction where the qualifications and service conditions of employees are left to the owners and operators?

Even though we neglected to correct every other inequality as between rail and highway and did correct inequality in respect of employees the problem would come very near being solved. Four months ago the Association of Railway Executives, having cited their competitors, remarked "In-so-far as any form of the above service is legitimate and a natural economic development, the railroads have no right to complain." Permit me to quote an observation of my own: "The purpose is to transfer motor service to the bracket of economic self-reliance. Then its economic possibilities alone will determine the kind and amount of work which is to be its field." Labor cost is a heavy item. To equalize that factor would go a long way toward lifting the motor vehicle to economic self-reliance.

Whatever affects railway income is the selfish concern of every one in the country —including the motor vehicle builders. To them as to the rest of us the vital thing is a prosperous United States; and to national prosperity strong and progressive railways are indispensable. Something ought to be done to improve railway credit. Various things can be done. One is to insure a favorable response from the public and the legislatures in this matter of equalizing rail and road competition. Motorists have every stake in such an outcome. They will save in taxes. They will gain in safety and comfort on the highway. They will share in the national prosperity which depends upon continuance of railway superservice, and in the acceleration of business recovery which railway purchases would stimulate if a strengthening of investors' confidence were to pave the way for construction and improvements."

Continued on Next Left Hand Page



Alco Alco

RAILWAY MANUFACTURING

"A business slump is never sc bad but that it leads to some good. A natural result of this year's situation has been that it has given the railroads an incentive to scrutinize all sources of expense.

The manufacturing and allied activities carried on in railway shops constitute one such class of operations. Suppose they were examined in the light of the conditions which prevail this year? Would the result be to increase or to reduce them?

With business conditions and railway expenses what they are, not a few railways can congratulate themselves that they are not now burdened with fixed properties and organizations for manufacturing supplies, while other railways wish that they were free from such impedimenta. It is an unpleasant thing to lay off labor when business is bad, but it can be done if it must be done. It is also possible to cease buying, and even discontinue manufacturing operations, when there is no money to pay the labor and no immediate need for the output, but when the land has been bought, facilities built and machines installed for manufacturing, they cannot be struck from the pay-roll, but go on exacting interest on the original expenditure and building up maintenance charges whether used or not.

On the corporation books a railway manufacturing plant may be an asset, but in times like the present it can become a liability, particularly when a highly specialized and competitive manufacturing industry is crying for work to do."

From an editorial in
Railway Age, September 20, 1930

American Locomotive Company
30 Church Street New York N.Y.

Alco Alco

Foreign

Operation of Buses Restricted in London

The Ministry of Transport of Great Britain has recently promulgated regulations which restrict the operation of buses within the congested areas of London. The new rules apply to motor coaches which have been operating from outlying districts into the center of London but not to the regular London omnibus services.

It is expected that the regulations will result in a return to railways of some suburban traffic which they had lost because of home-to-office services which the motor coaches were formerly able to give. The fact that patrons now have to employ another transport agency to get into the business districts of the city will mitigate the convenience formerly afforded.

L.M.S. Tickets as Advertising Media

A novel method of advertising, by means of inserts in the tickets sold to passengers, is being tried out by the London, Midland & Scottish of Great Britain, according to an article appearing in Modern Transport (London), from which the accompanying illustration of a sample ticket and advertising insert is reproduced. The new tickets, although the same as those formerly used in size, shape and wording, will be of envelope form, with a red tab bearing the word "Pull" at the top center. This tab is part of a small card inserted in the ticket and bearing the advertisement.

Three special machines for printing the new tickets have been installed by Insets, Ltd., Islington, England; they have taken three years to design and construct, and each is 45 ft. long with a weight of seven tons. The method of producing the tickets is as much of an innovation as the tickets themselves, the insert being printed as an integral part of the ticket. A reel of cardboard, fed into the machine on the same principle as that employed in rotary newspaper presses, passes through nine successive operations and emerges, complete with insert and tab, at the rate of 50,000 tickets per hour for each machine. As heretofore, however, the printing of the station of issue and destination on the face of the ticket will be done by the L.M.S.

A Replica of the New L.M.S. "Envelope" Tickets, Showing Advertising Insert

In announcing the new form of ticket, Sir Josiah Stamp, chairman of the board of the L.M.S., stated that "Human curiosity is the hub on which this new wheel of publicity will revolve. When you realize that the scheme applies to 200,000,000 passenger tickets a year, you will appreciate what a powerful force in advertising is about to be introduced. Care will be taken, however, that only firms of repute will be allowed to participate."

Equipment and Supplies

PASSENGER CARS

THE URUGUAYAN STATE RAILWAYS have ordered five combination passenger and baggage gasoline rail motor cars, from the J. G. Brill Company. Ing. Bautista Lasgoity, president, Calle Buenos Aires No. 588, Montevideo, Uruguay.

IRON & STEEL

THE WESTERN PACIFIC has ordered 10,350 tons of rails from the Colorado Fuel & Iron Company.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 4,500 tons of steel rail mainly 130-lb. section, from the Bethlehem Steel Company to be rolled at the Lackawanna plant, Buffalo, N. Y.; 3,000 tons are for delivery in April and 1,500 tons in May. These 4,500 tons are in addition to 3,000 tons ordered in January from the same company.

SIGNALING

THE MISSOURI PACIFIC has ordered from the General Railway Signal Company, 20 color-light signals, type D, for its line between Palestine, Tex., and Elkhart, 13 miles.

THE CANADIAN PACIFIC has ordered from the Union Switch & Signal Company materials for two automatic interlockings at Rosetown, Sask. Searchlight signals will be used.

THE NEW YORK RAPID TRANSIT CORPORATION has contracted with the General Railway Signal Company to furnish and install color-light signals on its local tracks between Broadway and Metropolitan avenue, in the Boroughs of Brooklyn and Queens, New York City.

THE MICHIGAN CENTRAL has ordered from the General Railway Signal Company material for the installation of automatic block signals and automatic train control on its line between St. Thomas, Ont., and Suspension Bridge, 115 miles, double track. Color-light signals will be used.

Supply Trade

The **Hutchins Car Roofing Company** has moved its New York office from 342 Madison avenue, to 500 Fifth avenue.

The Canton Culvert & Silo Company, Canton, Ohio, manufacturers of corrugated culverts since 1908, has changed its name to **The Canton Culvert Company.**

R. C. Vilas, chairman of the board of the **Pyle-National Company,** Chicago, has resigned on account of poor health, his resignation being effective as of March 14.

J. H. Baily, secretary of the **Edgewater Steel Company,** Pittsburgh, Pa., has been elected a vice-president and **D. W. McGeorge,** assistant secretary, has been elected secretary.

William L. Brown, 1600 Arch street, Philadelphia, Pa., has been appointed a special agent of the **Ohio Locomotive Crane Company,** Bucyrus, Ohio, for the sale of its products in the southeastern territory.

William B. Todd, assistant general manager of sales in charge of the automobile business of the **Jones & Laughlin Steel Corporation,** has been promoted to general manager of sales to succeed **C. S. Bradley,** deceased.

The Bethlehem Steel Company, Bethlehem, Pa., has become a licensee of the **Nitralloy Corporation,** New York, in the field of alloy steels. In the United States there are five other licensees for Nitralloy steel and in addition licenses have been granted to six companies manufacturing steel castings.

The Haskelite Manufacturing Corporation, Chicago, has moved its New York office from 501 Fifth avenue to the Knickerbocker building, 152 West Forty-second street. **Joseph A. Potchen** was recently transferred to the New York territory in an engineering and sales capacity to succeed **James J. Dunne.**

Ernest H. DuVivier, 30 Church street, New York, has been appointed representative in the Metropolitan New York district and northern New Jersey, of the **Illinois Testing Laboratories, Inc.,** Chicago, and **F. W. Fernald,** 335 Fifth avenue, Pittsburgh, Pa., has been appointed representative in western Pennsylvania and West Virginia.

Clark P. Pond has been appointed vice-president engineering and sales, of the **Truscon Steel Company,** Youngstown, Ohio. Mr. Pond was formerly connected in a similar capacity with David Lupton's Sons Company. He is widely known in the building field, having originated the top-hung continuous windows, tension operators and projected windows of vertical and horizontal types.

Continued on Next Left Hand Page

Strong Enough for Its Day

Staunch were the chariot wheels of the conquering Romans to meet the needs of their day. Now to meet the infinitely more exacting needs of today's transportation the first choice of many American railways is Gary Wrought Steel Wheels, for their superior strength, their greater safety, their increased efficiency.

U S STEEL

Illinois Steel Company

Subsidiary of United States Steel Corporation

General Offices: 208 South La Salle Street, Chicago

E. M. Vehmeyer, sales manager in the Detroit, Mich., plant of **Joseph T. Ryerson & Son, Inc.,** has been appointed manager of the plant. Mr. Vehmeyer has been associated with Joseph T. Ryerson & Son, Inc., for over 22 years; most of his time has been spent in the sales and service departments. For the last two years he has held the position of sales manager in the Detroit plant. **W. H. Basse,** formerly Detroit plant manager, has been transferred to Chicago where he will engage in special sales work.

The Gifford-Wood Company, Hudson, N. Y., which is engaged in the design, engineering and construction of elevating and handling equipment for coal, ice and other commodities, has acquired the **C. W. Hunt Company,** Staten Island, N. Y., which will be operated hereafter as a division of the Gifford-Wood Company. The C. W. Hunt Company has been engaged for over 50 years in supplying railroads and public utilities with skip hoists, vibrating screens, industrial railroads, pivoted bucket conveyors and related equipment.

The Railroad Water & Coal Handling Company, 608 South Dearborn street, Chicago, has purchased control of the **T. S. Leake Construction Company** of the same address but will operate it as a separate company. **M. D. Miller,** president of the Railroad Water & Coal Handling Company, has also been elected president of the T. S. Leake Construction Company; **C. O. Congdon** and **J. W. Miller** have been elected vice-presidents and **J. H. Wylie,** president of the T. S. Leake Construction Company, has been elected secretary and treasurer of that organization.

Bradley Stoughton, since 1923 professor of metallurgy at Lehigh University, has been appointed consulting metallurgist of **Standard Steel Works Company,** Burnham, Pa. Professor Stoughton was born in New York and received his early education in a private school in New Haven, later entering Sheffield Scientific School at Yale from which he was graduated in 1893. Three years later he also graduated from Massachusetts Institute of Technology. In 1898 he became affiliated with the Illinois Steel Company as metallurgist, and later became chief, cost statistical division, of the American Steel & Wire Company, of Cleveland. In 1901 he was appointed manager, Bessemer steel department, of Benjamin Atha & Company at Newark. A year later Professor Stoughton returned to the academic field and taught at Columbia until 1908 after which he became a consulting engineer. In 1913 he was appointed Secretary of the American Institute of Mining and Metallurgical Engineers, New York, a position he held for ten years. In 1923 Bradley Stoughton became professor of metallurgy at Lehigh, a position he still fills. Professor Stoughton is a member of nearly all the technical societies connected with the iron and steel industry, has made contributions to technical literature, and has had published two books —The Metallurgy of Iron and Steel, 1908, and Metallurgy for Engineers, 1926. He was awarded the Grasselli Medal of the Society of Chemical Industry—the seventh to receive this honor.

Henry B. Nickerson, vice-president of the Consolidated Ashcroft Hancock Company, has been elected vice-president in charge of sales of the **Ashton Valve Company,** Boston, Mass. Mr. Nickerson will assume his new duties

Henry B. Nickerson

on March 16 and will have his headquarters at the main office. Previous to his service with the Consolidated Ashcroft Hancock Company, Mr. Nickerson had served with the American Schaeffer & Budenberg Corporation and the American Steam Gage & Valve Manufacturing **Company.**

Link-Belt Company Annual Report

Net income of $2,310,332 after all charges, including depreciation and provision for Federal taxes, was reported by the Link-Belt Company for the year ending December 31, 1930. This net, which is equivalent to $2.89 per share on the company's outstanding common stock, compares with the 1929 net income of $3,484,686, or the equivalent of $4.54 per share on the common stock.

Surplus increased from $6,717,320 on December 31, 1929, to $6,923,792 at the close of last year. Dividends of $260,000 on the preferred stock and $1,843,860 on the common stock, or a total of $2,103,860, were paid during the year.

EIGHTY-SIX DAYS without a fatal injury to an employee was the record of the Safety Department of the Santa Fe on February 6, as reported for the whole system, by Isaiah Hale, safety superintendent; and now he reports a single fatal accident in 110 days. This is the subject of a circular which has been issued to remind all hands that it will be to the marked discredit of the road if less creditable performance should ever appear in future records. And Mr. Hale observes that this present record of "1 in 110" affects only one road; all the other roads in the system still have a record of complete freedom from fatalities for 110 days.

Construction

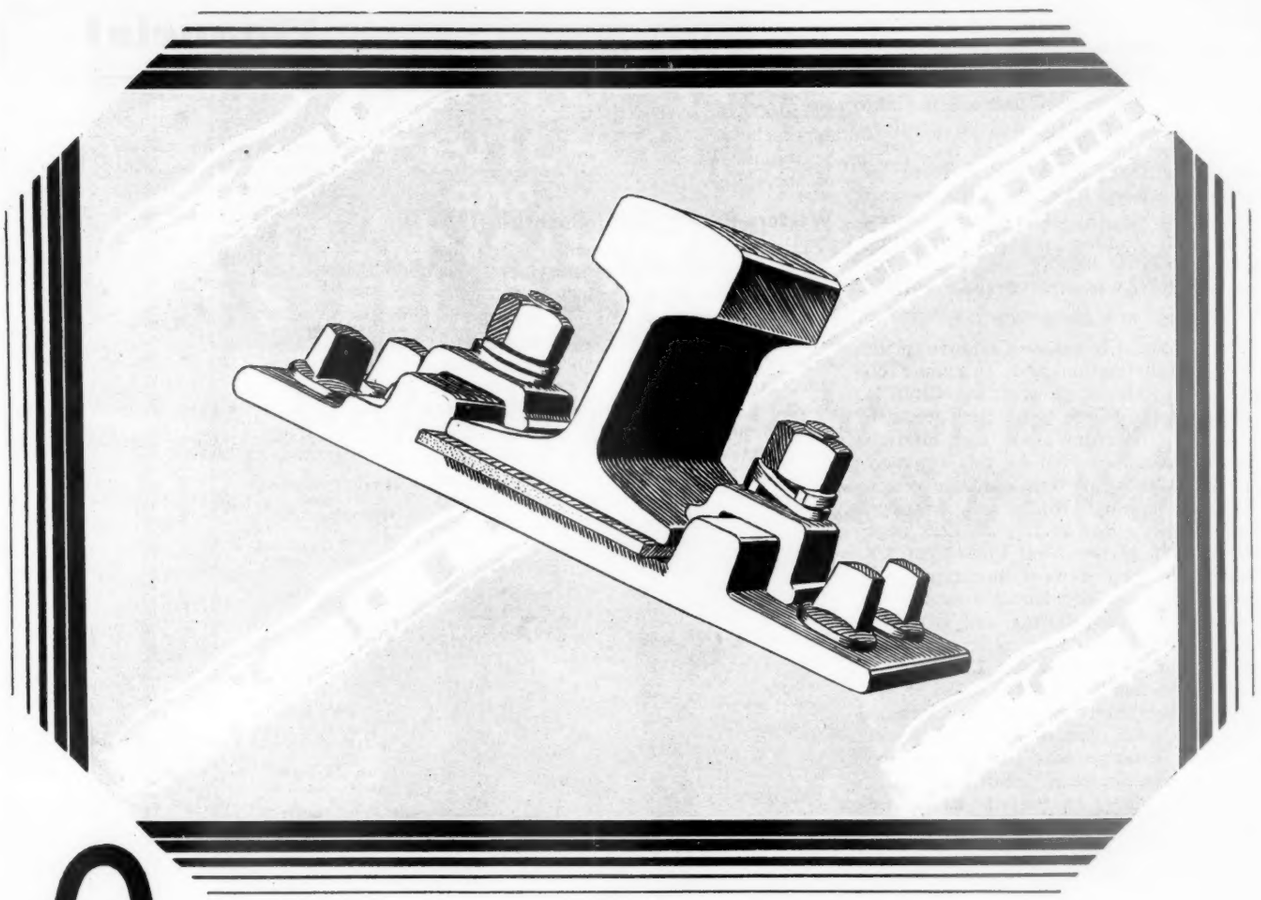
ATCHISON, TOPEKA & SANTA FE.—A general contract for additions and improvements in the power plant at Topeka, Kan., including the construction of a one-story and basement addition, has been let to Lundgren & Carlson, Topeka.

GREAT NORTHERN.—Plans are being prepared for the construction of a line 24 miles south of Bend, Ore., to replace the old Shevlin-Hixon logging railroad which has been used as a part of the Bend-Klamath Falls line since 1928. The line will extend from Bend in a general southwesterly direction along the east side of the Deschutes river to a point near Benham Falls, where a connection will be made with the existing track of the Shevlin-Hixon logging railroad. From this point southward for about 10 miles, a line will be constructed along a route which generally coincides with or parallels the existing Shevlin-Hixon railroad grade. At this point, connection will be made with the Great Northern 46 miles north of Chemult. The construction will be part of the proposed California-Pacific Northwest route which will be opened in 1932 when the connection between the Great Northern at Klamath Falls and the Western Pacific at Keddie, Cal., is completed.

ILLINOIS CENTRAL.—The company plans to construct an outbound freight house at East St. Louis, Ill., at a cost of $300,000, to replace one destroyed by fire on February 28. The old two-story brick structure was 800 ft. by 100 ft. in area and the loss due to the fire was estimated at $500,000.

MISSOURI-KANSAS-TEXAS.—A contract has been awarded to the American Bridge Company for the design, fabrication and erection of the steel superstructure for a bridge over the Missouri river at Boonville, Mo. The contract provides for commencing the erection of the new spans about August 1. The railroad expects to complete the new bridge, ready for traffic, about January 31, 1932. The concrete substructure for the new bridge was constructed during 1930 by the Kansas City Bridge Company under contract. This substructure is founded on solid rock. The river piers were sunk by pneumatic process to a maximum depth of approximately 50 ft. below low water. The total cost of the completed project will be approximately $1,233,000. The new superstructure will be designed for Cooper's E-70 loading and will consist of three 300-ft., one 408-ft. vertical lift, and one 247-ft. through riveted truss spans, and one 60-ft. through plate girder span. The lift span will provide a clear horizontal opening of 400 ft. for river navigation, and, when raised, will have a vertical clearance of approximately 57 ft. above low water. It will be interlocked with automatic block signals, and will be electrically operated and controlled automatically with the latest approved safety devices. This will be the longest

Continued on Next Left Hand Page



ALONG MODERN LINES . . .

GEO, a modern type of railroad track construction, not only provides for the heavier loads and increased speed of transportation today, but anticipates track requirements for many years to come. 7900 miles of G E O track have already been laid in Germany and the modernization of their main lines will be completed within the next few years. They then plan to run trains at an average speed of 90 miles per hour! Other European countries, quick to follow Germany's lead, are rushing the installation of G E O that they may be abreast of the times. Here in America, test sections have been installed and many more are now being planned.

Greater safety, a radical reduction in maintenance costs, smooth and practically noiseless track, longer life of rails and ties . . . . these are chief among the many advantages of G E O. A test section will convince you of its outstanding superiority.

Descriptive literature will be sent at your request, and Carnegie engineers are at your service to discuss with you this important new development.

GEO TRACK CONSTRUCTION

CARNEGIE STEEL COMPANY - PITTSBURGH

Subsidiary of United States Steel Corporation

125

vertical lift span for railroad service so far constructed.

MISSOURI PACIFIC.—A contract has been awarded the S. Patti Construction Company, Kansas City, Mo., for the construction of the superstructure of the 2,500,000-bu. capacity grain elevator to be erected at Kansas City, Mo. The contract for furnishing all bins, hoppers, tubes, piping, car loading spouts, distributing spouts, elevator legging and heads, has been awarded to the Standard Steel Works.

NEW YORK CENTRAL.—Tentative plans for a freight station and warehouse on the West Side of New York City, to replace the present St. John Park terminal at Laight, Beach, Varick and Hudson streets, have been filed by this company with the Manhattan Bureau of Buildings. The new terminal, which was described in the *Railway Age* of July 27, 1929, page 236, as part of the New York Central's West Side improvement program, will occupy the four city blocks bounded by Washington, West, Spring and Clarkson streets. The preliminary plans, as filed, provide for a frontage of 1,266 ft. on Washington and West streets, 190 ft. on Spring street and 282 ft. on Clarkson street, but other details, including height and track arrangements for serving the building have not been definitely decided. Existing buildings on the site have been razed under contracts previously reported in the *Railway Age*, so that construction of the new freight terminal may be expected to start shortly.

The Public Service Commission of New York has amended its order for the elimination of grade crossings of the New York Central tracks at Main street, Salt road and Mill street, Clarence, N. Y., to provide for elimination by relocation of some 4,600 ft. of double track.

NORTHERN PACIFIC.—Examiner M. S. Jameson, of the Interstate Commerce Commission, in a proposed report, has recommended that the commission issue a certificate authorizing the construction of a branch line from Woodrow to Bloomfield, Mont., 24 miles.

PENNSYLVANIA.—A contract has been awarded to H. E. Wagner, Harrisburg, Pa., for the construction of an overhead steel and concrete bridge west of Dewart, Pa., at a cost of about $28,000.

ST. LOUIS-SAN FRANCISCO.—Bids are being received for the construction of two 250-ton capacity coal chutes at Amory, Miss., and Thayer, Mo., at an estimated cost of $30,000.

TERMINAL RAILROAD ASSOCIATION.—The St. Louis, Mo., Board of Public Service will open bids on March 31, for the construction of the foundation, reinforced concrete piers, abutment and retaining wall for the East St. Louis Union station approach to the St. Louis Municipal bridge over the Mississippi river between St. Louis, Mo., and East St. Louis, Ill., and also for the fabrication and furnishing of structural steel for this approach to the bridge. The foundations, piers, abutment and retaining wall are estimated to cost $565,000 and the structural steel $625,000. Through an arrangement with the city, the Terminal Railroad Association of St. Louis is furnishing the $3,250,000 to be required for the railroad approaches to the bridge and later will be refunded from tolls paid for the use of the bridge.

Western Pacific Improvements in 1931

The Western Pacific will expend approximately $3,000,000 during 1931 for the improvement of properties and for additional facilities and equipment. Of this amount, which does not include the cost of ordinary maintenance or the construction of new lines or extensions, the Western Pacific will expend $2,600,000, the Sacramento Northern $230,000, and the Tidewater Southern $170,000. The principal items in the Western Pacific budget are: Improvements in main and branch line roadway and track; construction of passing, interchange and yard tracks; repair and renewal of bridges and trestles; repairs to cars and locomotives; improvement of station and yard facilities; additional machinery and improvements for shops; construction of miscellaneous structures; improved housing for employees; and improving industrial property.

These expenditures are largely a continuation of the program which was adopted in 1927, and include the laying of 110-lb. rail to replace 85-lb. rail on 60 miles of track in Nevada, the ballasting of 27 miles of track in Utah, and bank widening on various parts of the system. The expenditures also include a general improvement of the property such as additional yard tracks and passing tracks, line changes in the Feather River canyon, etc., so as better to facilitate the handling of business.

The amount appropriated for additional equipment includes the purchase of five Mallet locomotives for which an order was recently placed with the Baldwin Locomotive Works. These locomotives, which will cost approximately $625,000, will be used in the Feather River canyon to facilitate the handling of business in the peak season of the year when heavy shipments of perishables are being moved out of California for the East.

THE WOMEN'S AID of the Pennsylvania Railroad—the system-wide organization of wives, mothers and daughters of the officers and employees of the railroad—is now expending approximately $25,000 a month to aid families of employees who may be in need. This includes furloughed men; and, in particular, those who have suffered illness or other misfortune. Mrs. W. W. Atterbury, director-general of the Aid, says that the demands upon the organization have recently been extremely heavy but the officers are carrying on efficiently, throughout the system, and worthy cases are properly attended to.

The Aid now has more than 200,000 members and there is an intensive drive going on throughout the system to increase the membership and to secure additional funds. Money is raised by a small annual assessment and by bake sales, dances and other entertainments.

Financial

AKRON, CANTON & YOUNGSTOWN.—*Annual Report.*—The annual report of this company and the Northern Ohio Railway for the year 1930 shows net income after interest and other charges of $300,502, as compared with a net income of $735,087 in 1929. Selected items from the Income Statement follow:

	1930	1929	Increase or decrease
RAILWAY OPERATING REVENUES	2,720,402	3,809,447	—1,089,045
Maintenance of way	443,456	560,549	—117,093
Maintenance of Equipment	267,564	316,877	—49,313
Transportation	780,396	930,460	—150,063
TOTAL OPERATING EXPENSES	1,874,518	2,192,258	—317,740
Operating ratio	68.50	57.42	+11.08
NET REVENUE FROM OPERATIONS	857,036	1,621,913	—764,877
Railway tax accruals	45,507	251,583	—206,076
Hire of freight cars	282,866	386,400	—103,533
Joint Facility rents	13,319	30	+13,289
NET RAILWAY OPERATING INCOME	547,354	992,093	—444,740
GROSS INCOME	665,113	1,091,556	—426,443
Interest on funded debt	345,150	338,962	+6,187
TOTAL DEDUCTIONS FROM GROSS INCOME	364,610	356,468	+8,142
NET INCOME	300,502	735,087	—434,584

ATCHISON, TOPEKA & SANTA FE.—*Bond.*—The Interstate Commerce Commission has authorized the Santa Fe & Los Angles Harbor, to issue a 6 per cent, first mortgage, series B bond for $600,000, to be delivered to the parent company in satisfaction of indebtedness.

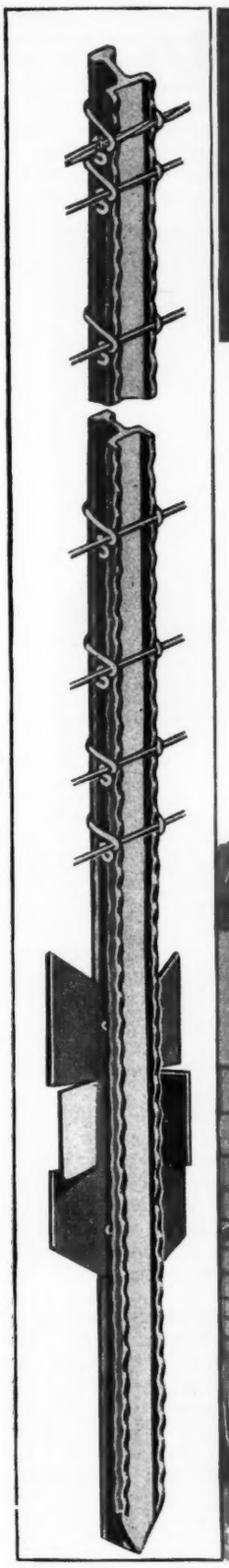
ATLANTIC COAST LINE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Goldsboro, N. C., to Smithfield, 21.47 miles.

ATLANTIC COAST LINE.—*Control of Charleston & Western Carolina.*—The Interstate Commerce Commission has denied the application of this company for permission to acquire control of the Charleston & Western Carolina by purchase of capital stock and by lease, having found such acquisition not to be in the public interest.

BOSTON & MAINE.—*Bonds.*—A syndicate including Lee, Higginson & Co., Kidder, Peabody & Co., Harris, Forbes & Co., and the First National Old Colony are offering, subject to the approval of the Interstate Commerce Commission, $13,943,000 of first mortgage 4¾ per cent bonds, series JJ, of this company maturing in 1961. The issue is priced at 99¼ to yield about 4.8 per cent.

LEHIGH VALLEY.—*Final Valuation.*—The final value for rate-making purposes was fixed by the Interstate Commerce Commission at $95,416,561 for the property owned and used for common-carrier

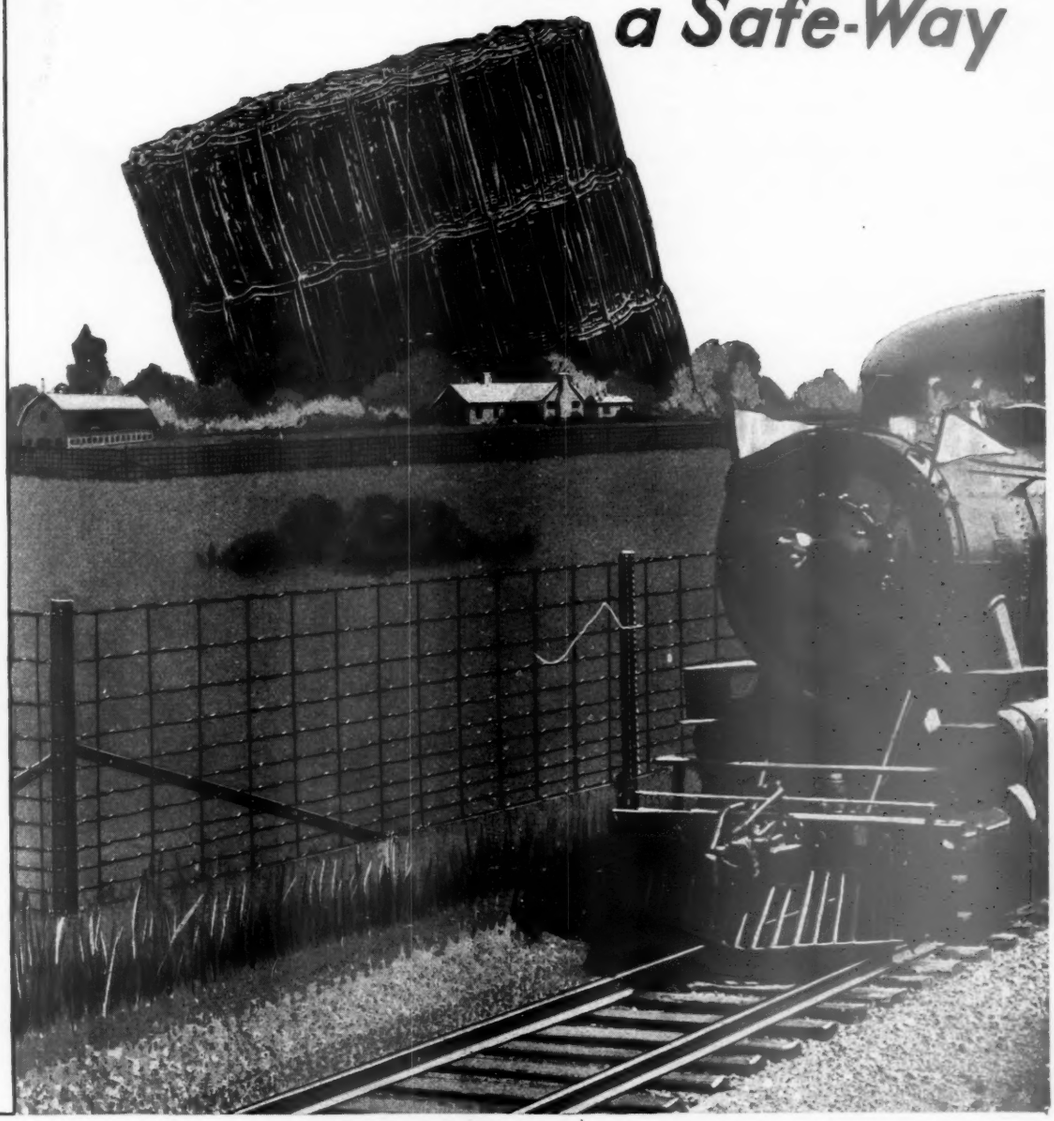
Continued on Next Left Hand Page



AMERICAN Fence and BANNER STEEL POSTS

IT is cheaper to put up a good fence than to pay stock claims. Likewise it is economy to buy adequate protection—proved protection—such as that offered by American Railroad Fence and Banner Steel Line Posts—the post of railroad rail construction. These products including National Expanding Anchor End and Corner Posts meet every specification recommended by the American Railway Engineering Association.

Make Your Right-of-Way- - a Safe-Way



1831

1931

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago SUBSIDIARY OF UNITED STATES STEEL CORPORATION And All Principal Cities

Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco *Export Distributors:* United States Steel Products Company, New York

purposes and at $113,292,188 for that used but not owned as of June 30, 1917. The company had outstanding on valuation date a total of $144,138,000 in stocks and bonds, according to the report, and its investment in road and equipment as stated in its books was $86,690,663. With readjustments required by the accounting examination this would be increased to $91,079,608. The cost of reproduction less depreciation of the property owned and used, exclusive of land, was placed at $72,902,664 and that of the property used but not owned at $85,972,946. The owned and used property included 324 miles of line and the property used but not owned, leased from 13 subsidiary companies, included 1,085 miles.

MISSOURI-KANSAS-TEXAS.—*Purchase of Beaver, Meade & Englewood.*—The Missouri-Kansas-Texas has purchased this railroad which extends from Beaver, Okla., to Eva, 85 miles, for $1,850,000. The purchase was approved by the Interstate Commerce Commission in 1929, following a prolonged hearing when the commission denied the Chicago, Rock Island & Pacific's application of opposition, deciding that the public interest would be better served through Katy control.

MISSOURI-KANSAS-TEXAS.— *Acquisition.*—This company has applied to the Interstate Commerce Commission for approval of a contract for the purchase of control of the Beaver, Meade & Englewood which has a line from Beaver, Okla., to Eva, 85 miles, by acquisition of $911,000 of first mortgage bonds and $920,700 of stock for a cash payment of $22,000 per mile of main line. The Interstate Commerce Commission had previously made a finding that acquisition of control of the property by the M-K-T would be in the public interest and had denied an application by the Chicago, Rock Island & Pacific for authority to acquire control of the property.

NEW YORK CENTRAL.—*Reduces Dividend.*—The directors of this company have declared a quarterly dividend of $1.50 instead of the customary $2, thus reducing the annual rate from $8 to $6.

NEW YORK CENTRAL.—*Abandonment.*—This company and the Cleveland, Cincinnati, Chicago & St. Louis have been authorized to abandon a portion of the latter company's line between Beesons, Ind., and Hagerstown, 13.6 miles.

NEW YORK CENTRAL.—*Bonds.*—A syndicate including J. P. Morgan & Co., the First National Bank, the National City Co., the Guaranty Co. of N. Y., the Bankers Co. of N. Y., the Chase Securities Corp., Harris, Forbes & Co., Kidder, Peabody & Co. and Lee, Higginson & Co. are offering, subject to the approval of the Interstate Commerce Commission, $75,000,000 of 4½ per cent refunding and improvement mortgage series A bonds of this company due 2013 priced at 100.

NEW YORK CENTRAL.—*Big Four Stock Price Arbitration.*—Arbitrators have valued minority holdings of the stock of the Cleveland, Cincinnati, Chicago & St. Louis at $310 a share. Under the terms of the lease of the Big Four to the New York Central the latter company pays a rental to yield $10 a share on Big Four stock, with the proviso that holders not satisfied with this yield might sell their stock to the Central at a price to be determined by arbitration.

PENNSYLVANIA.—*Bonds.*—Kuhn, Loeb & Co. are offering, subject to the approval of the Interstate Commerce Commission, $50,000,000 of general mortgage 4¼ per cent series D bonds of this company due 1981 priced at 96½ to yield over 4.42 per cent.

Dividends Declared

Kansas City Southern.—Common, 1¼ per cent, quarterly, payable May 1 to holders of record March 31; Preferred, 1 per cent, payable April 15 to holders of record March 31.

Lehigh Valley.—Common, $.62½, quarterly; Preferred, $1.25, quarterly, both payable April 1 to holders of record March 14.

New York, Lackawanna & Western.—1¼ per cent, quarterly, payable April 1 to holders of record March 14.

Old Colony.—$1.75, quarterly, payable April 1 to holders of record March 14.

Average Prices of Stocks and of Bonds

	Mar. 10	Last week	Last year
Average price of 20 representative railway stocks.	89.68	91.44	133.96
Average price of 20 representative railway bonds..	94.04	93.89	93.27

Railway Officers

EXECUTIVE

J. M. Bernardin has been elected vice-president of the Bevier & Southern, with headquarters at Kansas City, Mo.

Charles Manning, assistant to vice-president of the Canadian National, recently retired after more than 47 years' service with that road and its predecessor company, the Grand Trunk Railway System. Mr. Manning was born at New Swindon, England, in 1862. He began his railway career with the Great Western at Bristol, England, in 1876, and in 1883 he moved to Canada and commenced service with the Grand Trunk in the office of the mechanical superintendent. Subsequently, he became assistant to the vice-president in charge of motive power and car service and was appointed assistant to the operating vice-president in 1920. In 1922, Mr. Manning became assistant operating manager of the C. N. R., and in February, 1923, he was appointed assistant to vice-president in charge of colonization, agriculture, development of natural resources, lands, telegraphs, radio, insurance, pensions, etc., the position which he recently relinquished.

Frederick O. Stafford, traffic manager of the New York Central system west of Buffalo, N. Y., has been appointed assistant vice-president, with jurisdiction over traffic and operations, with headquarters at Buffalo, N. Y. Mr. Stafford was born at Tiverton, Ont., on June 16, 1876, and after attending the Ontario School of Pedagogy, Toronto, Ont., entered railway service in April, 1900, with the Merchants Despatch Transportation Company, a subsidiary of the New York Central. Later he served with this company at Sioux City, Iowa, Kansas City, Mo., Des Moines, Iowa, and St. Louis,

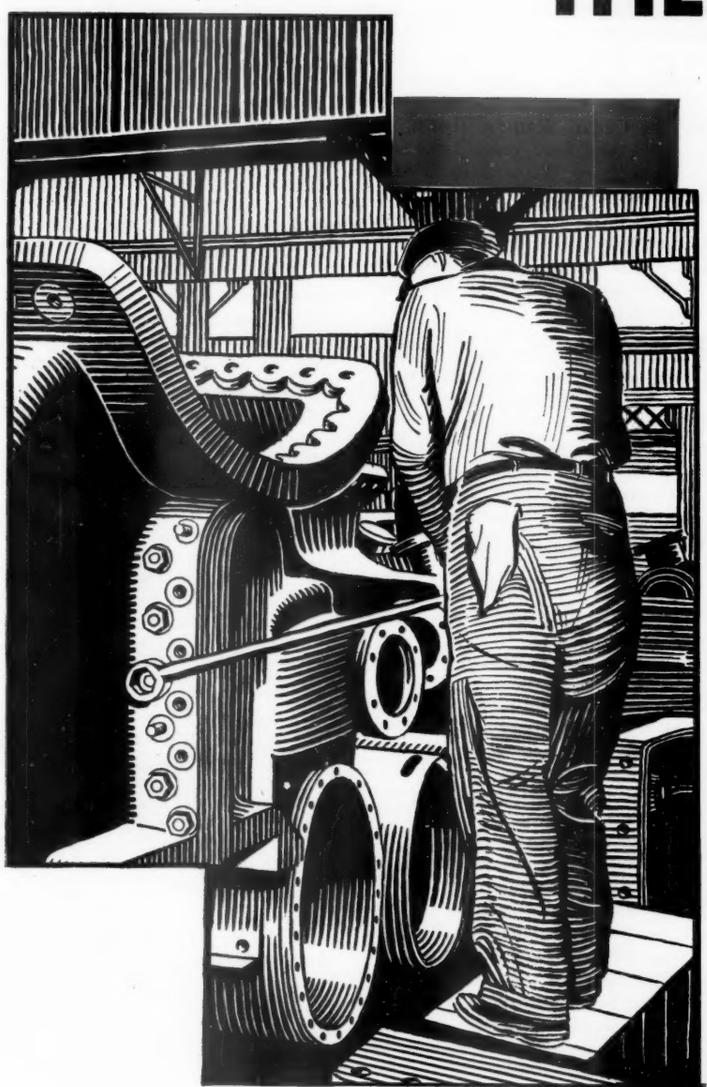
Frederick O. Stafford

Mo., and in January, 1911, he became general westbound agent of the New York Central at Chicago. In August, 1917, he was advanced to manager of the New York Central Fast Freight Lines at Chicago, where he remained until July, 1920, when he was appointed general freight and passenger agent of the Rutland, with headquarters at Rutland, Vt. Mr. Stafford returned to the New York Central in August, 1924, as assistant freight traffic manager of the lines west of Buffalo at Chicago, then being promoted to freight traffic manager of the same territory in December, 1926. He was further promoted to assistant traffic manager of the lines west of Buffalo in November, 1927, and on February 1, 1930, he was promoted to traffic manager, the postion he held until his recent advancement.

James E. Davenport, assistant to assistant general manager of the New York terminal district of the New York Central, has been appointed assistant to vice-president, as announced in *Railway Age* of March 7, page 526. Mr. Davenport was born at Charlestown, W. Va., on October 8, 1887, and was educated at Georgia School of Technology, receiving the degrees of B. S. in M. E. in 1908, and B. S. in E. E. in 1909. He entered railroad service in 1909, as special apprentice of the West Albany shops of the New York Central, remaining in that position until 1912, when he was appointed engine house foreman at N. White Plains, N. Y. In 1914 Mr. Davenport was appointed dynamometer car engineer; in 1917 trainmaster of the Harlem division, and

Continued on Next Left Hand Page

No S-t-r-e-t-c-h In THESE BOLTS



THE higher stresses encountered in modern railroading have put excessive strains on the old engine bolt material.

To overcome the maintenance troubles that quickly follow when engine bolts stretch, the metallurgists of Republic Steel Corporation developed an Agathon alloy steel particularly suited for this service.

■ It possesses the fatigue resistance that in the past made iron the favored material, but unlike iron, it has the necessary high tensile strength to hold without stretching.

■ Agathon Engine Bolt Steel is uniform and free from the slag pockets, seams and inclusions that may ruin a partially machined bolt.

■ It is the modern engine bolt material developed for modern railroading.

AGATHON STEELS TRADE MARK

Central Alloy Division

REPUBLIC STEEL CORPORATION

MASSILLON, OHIO

World's Largest and Most Highly Specialized Alloy Steel Producers

in 1918 was transferred to a similar position on the Mohawk division. He served as engineer dynamometer tests from 1920 to 1923, and in the latter year he was appointed superintendent fuel in locomotive performance. In 1926 he was

James E. Davenport

advanced to superintendent of the Adirondack division; from 1927 to 1930 he served as superintendent of the River division, and in 1930 he was appointed assistant to assistant general manager, the position he held until his recent promotion.

FINANCIAL, LEGAL AND ACCOUNTING

A. C. Middleton, auditor of disbursements of the Chicago, Rock Island & Pacific, has been promoted to assistant general auditor to succeed **R. H. Carleton,** deceased; **J. M. Gallagher,** assistant auditor of disbursements, has been promoted to auditor of disbursements, and

A. C. Middleton

A. M. Haupt, chief clerk, has been made assistant auditor of disbursements. Mr. Middleton entered railroad service on January 1, 1898, with the Chicago & North Western at Missouri Valley, Ia., as a car sealer. He worked in various capacities, as car checker, shop timekeeper, material clerk, and chief clerk to the storekeeper. In 1903, he was appointed storekeeper of the C. & N. W. at Belle Plaine, Iowa, and in 1905 he was made traveling auditor of the material and time accounts under the general storekeeper. In December, 1905, he entered the service of the Rock Island Lines as traveling time accountant under the auditor of disbursements. In June, 1906, he was made first accounts clerk in the office of the auditor disbursements. He was appointed district accountant at Cedar Rapids, Iowa, in January, 1908, and four years later was made chief clerk to the auditor of disbursements at Chicago. In February, 1921, he was appointed assistant auditor of disbursements and on January 1, 1928, was promoted to auditor disbursements, which position he held until his recent promotion.

N. H. Lassiter, vice-president and general attorney of the Chicago, Rock Island & Gulf, with headquarters at Fort Worth, Tex., has been appointed vice-president and general solicitor. **Robert Harrison,** assistant general attorney, with headquarters at Fort Worth, has been appointed general attorney. **John T. Pearson** has been appointed assistant general attorney, with headquarters at Forth Worth.

OPERATING

Leroy Relyea, assistant superintendent of the New York Central, with headquarters at Weehawken, N. J., has been appointed assistant to general superintendent, New York terminal district.

The jurisdiction over all officers and activities of the Northern district of the Union Pacific will be transferred to the immediate supervision of the general manager of that railroad, **N. A. Williams,** whose headquarters are at Omaha, Neb., on March 15. **R. E. Brooks,** general superintendent of the Northern district with headquarters at Cheyenne, Wyo., has been appointed superintendent of the Utah division of the Oregon Short Line, extending from Salt Lake City, Utah, to Butte, Mont., with headquarters at Salt Lake.

William H. Corbett, superintendent of the Minnesota division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Enderlin, N. D., has been promoted to assistant to the vice-president and general manager, with headquarters at Minneapolis, Minn., succeeding **Thomas W. Flannagan,** deceased. **Bertram G. Cross,** trainmaster of the Stevens Point division at Stevens Point, Wis., has been promoted to superintendent of the Missouri river division, with headquarters at Bismarck, N. D., succeeding **James R. Branley,** who has been transferred to the Gladstone division. Mr. Branley replaces **August H. Mann,** who has been transferred to the Minnesota division to succeed Mr. Corbett. **William C. Clausen** has been appointed trainmaster of the Stevens Point division, succeeding Mr. Cross. **Samuel A. Towne** has been appointed trainmaster of the Minnesota division at Glenwood, Minn., to succeed **T. C. Loftus,** deceased.

Effective March 1, **Edwin C. Keenan,** at his own request, retired as general superintendent telegraph and telephone of the New York Central, and **Raymond F. Finley,** superintendent telegraph, with headquarters at Cleveland, Ohio, has been appointed to succeed Mr. Keenan.

Mr. Keenan was born on April 20, 1868, at Toledo, Ohio, and commenced his business career on August 31, 1885. From then until 1892 he served as railway telegraph operator at various stations and in the dispatcher's office at Detroit, Mich., and Toledo. In 1892 he was appointed clerk in the engineering department of the Lake Shore & Michigan Southern (now the New York Central) at Toledo, and in 1900 was appointed clerk in general offices, engineering department, at Cleveland, Ohio. From 1901 to 1905, he served as chief

Edwin C. Keenan

clerk, engineering department, Lake Erie & Western (now New York, Chicago & St. Louis) at Indianapolis, Ind. From 1905 to 1910, he was chief clerk in engineering department, Lake Shore & Michigan Southern, at Cleveland, and in 1910 he was promoted to superintendent telegraph. From October, 1912, to May, 1916, Mr. Keenan served as general superintendent of telegraph, New York Central Lines west of Buffalo at Chicago, and from May, 1916, until his retirement he was general superintendent of telegraph and telephone New York Central Lines, representing the railroads of the New York Central system.

TRAFFIC

E. D. Hanes has been appointed supervisor of coal traffic of the Virginian, with headquarters at Norfolk, Va.

E. E. Gordon, passenger traffic manager of the Cincinnati & Lake Erie,

Continued on Next Left Hand Page